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CONTENTS

	PAGE
Editorial Notes	313
Five-Year Plan for the Nigerian Railway	315
British Transport Statistics	315
Victorian Railways	316
Railway Civil Engineering in the U.S.A.	317
Letters to the Editor	318
The Scrap Heap	319
Overseas Railway Affairs	320
Atlantic-Council Bluffs Chord Line, C.R.I. & P.RR.	322
Protecting Electric Traction Installations	323
Electric Traction Section	324
Personal	331
News Articles	334
Contracts and Tenders	336
Notes and News	338

Higher Passenger Fares ?

WHEN the British Transport Commission applied, earlier in the year, to the Minister of Transport & Civil Aviation for authority to raise railway freight, dock, and canal charges by 10 per cent, the Minister, Mr. Alan Lennox-Boyd, in accordance with the statutory procedure already obtaining under the Transport Act of 1947, consulted the Permanent Members of the Transport Tribunal sitting as a committee, before giving his decision authorising the increase as from March 1. In a statement supporting its application for the increase the Commission said that it suggested that to meet increased costs it might be possible to make "selective increases" in local passenger fares, as any general increase in long-distance railway fares would "do serious damage to precisely those traffics which railways find profitable." The Commission is reported to have consulted the Transport Tribunal last week about application under Section 23 of the Act of 1953, by which the Tribunal can allow an immediate increase in passenger fares if the increase does not exceed 10 per cent and the Tribunal is satisfied that it is needed to pay for increased costs which might otherwise seriously affect the Commission's financial position. This seems to have been a request for elucidation of the new procedure. No actual application for a fares increase is understood to have been made yet, but in view of the factors mentioned above, and of the argument that fares in the London area have not been making an adequate contribution to revenue, it seems that London area fares are the only railway charges in which an increase is likely to be sought in the near future. There is bound to be opposition to any such increase, and strong consumer resistance, in moving house or in other ways to reduce travel, on the part of the public which, however, is less capable of such steps than it is in the provinces. Opposition to the recent freight increases is taking the form of prayers tabled in the House of Commons this week for annulment of the Order making them. The Commission meanwhile is continuing to make strenuous efforts to achieve economies, and has made a start on examination of its railway wage and manpower problems as an additional step towards increasing efficiency in railway working; but a large section of the public does not understand the reasons which have led the Commission to seek increases in its charges.

Counting the Cost

THE statement entitled "Count the Cost" which appeared for the first time last week as an advertisement by the British Transport Commission in some national daily newspapers should go far to dispel misconceptions as to increases in railway freight charges. In raising them, it is pointed out, the railways have not simply passed on increased costs direct to the transport user; greater efficiency and economy have done much to hold down charges. If the whole of the cost increases since 1938, some of which are listed in the statement, had been passed on, the level of freight charges would have been much higher than the present 253 per cent of the prewar figure; and because of the restriction to a maximum charge per ton in two recent rate increases, the total rise is considerably less than 150 per cent for many railway users, especially over long distances. The railways, it is stressed, do not generate inflationary spirals; they are caught up in spirals generated elsewhere. The statement ends by asking how many other goods and services sold at their true cost have gone up in price since 1938 as little and as slowly as railway transport. The wording of the advertisement, clear and forthright, but temperate, is well suited to intelligent readers, and the typography and layout are pleasing.

South African Railways Service to Industry

THE South African Railways are considering ways of giving still greater assistance to industry. Mr. P. O. Sauer, Minister of Transport, when he opened a new siding to serve a new power station being erected for the Johannesburg municipality, said that the Administration had bought £18,000,000 worth of South African manufactured goods in the 1952-53 financial year. Secondary industry in the Union should do all within its means to take its rightful place as an exporter. In 1911, secondary industries accounted for only £9,000,000, or about 7 per cent, of the national income, but in 1951-52 they contributed no less than 293,800,000, or almost 24 per cent, to it. Mr. Sauer said the financial position of the South African Railways was sound, though no surplus could be expected during the present financial year. They had originally budgeted for a deficit of £4,000,000 during the year ending March 31, but there had been a welcome change in the situation, chiefly because of the tariff increase last October, and of a successful economy campaign. The loss at the end of the financial year was now likely to be only between £500,000 and £1,000,000, and on the financial side the railways viewed the future with confidence.

Overseas Railway Traffics

SOUTH African Railways & Harbours railway receipts, after a temporary, seasonal fall at the turn of the year, rose steadily week by week from £2,107,000 for the week ended January 9 to £2,364,000 for that ended February 6, compared with £2,026,000 for the corresponding week of 1953; each week's total in January, moreover,

exceeded the corresponding weekly total last year. Almost all traffics in January showed increases over 1953, as did the harbours and airways. Gold Coast Railway traffics for January totalled £398,941; the aggregate from April 1, 1953, is £3,525,342, an increase of £255,603 over the corresponding total in 1952-53. Midland Railway of Western Australia traffics for December were £A.68,517, an increase of £A.16,835 over the figure for December, 1952. Aggregate receipts for the second half of last year were £A.352,807, an increase of £A.20,987 over the corresponding six months of 1952. Canadian Pacific gross earnings for January were $30,245,000, and working expenses $31,540,000; for January last year the gross earnings at $35,766,000 exceeded working expenses by $91,000.

Rail and Road in French West Africa

STUDIES are in progress to consider the application of road-rail trailers to conditions in the several territories of French West Africa. Planters and commercial firms welcome a vehicle which can be loaded at the point of production, sealed, and placed on rail at the nearest station, obviating the disadvantages inseparable from transhipment in the tropics. Use of trailers should be of particular value in territories served largely by single metre-gauge lines without feeder branches. Administrative intervention in transport has been slight, but the Governor General has recently issued a transport co-ordination order; this is reported to amount at present only to a demand for statistical information from the operators of road and other forms of transport, but further Government intervention is expected in the form of controls over road services. Despite measures to improve the various railways and to allow of faster and heavier trains, such as track improvements and dieselisation, road competition, aggravated by improved road surfaces and bridging, is beginning to be felt acutely. Apart from the question of pilfering, it is significant that road-rail transhipment should be a problem in regions where labour is still comparatively cheap.

Financial Problems of the S.N.C.F.

IT is natural for there to be growing public uneasiness at the annual cost borne by the State for the working of the French National Railways, partly in making good the operating deficit and partly in compensation to the railways for the numerous fare concessions made obligatory by social legislation. For 1954 the total cost is estimated at fr. 150,000-160,000 million. A pamphlet recently published in France, and reviewed in this issue, imagines that the case for and against the railways is being argued in court. Technical progress is undisputed, but economies realised in this way, amounting this year to fr.30,000 million, are swallowed up by new wage rates and pension scales, the latter already in the region of fr.80,000 million and being paid to a greater number of recipients than there are railwaymen at work. Closing of branch lines is often recommended as an economy measure, but here also the railways have little freedom of action because withdrawal of facilities in many places would conflict with Government social policies. The need is seen for consistent Governmental direction of transport as a whole, in contrast to a situation in which State aid is sometimes given to the establishment of competitive agencies whose operations will aggravate the serious position of the railways.

New Rock Island Chord Line

THE original railway running from east to west across the State of Iowa, between Atlantic and Council Bluffs, was constructed in 1869. It followed a rather indirect route, and, as was usual in those days, was built as far as possible as a surface line to minimise earthwork and capital cost. Curvature was excessive and in many places necessitated speed restrictions of 45 m.p.h. Twelve years earlier General Dodge had recommended the construction of a more direct line between these points, but his recommendation was ruled out on grounds of cost; it is along this direct route, however, that the new cut-off, described elsewhere in this issue, has now been built. Because of its shorter length and much higher standard, the chord will secure many economies and considerably shorter journey-times. It is the last and most important realignment undertaken by the Chicago, Rock Island & Pacific administration in the past sixteen years. Instead of normal telephone land lines as means of communication throughout the construction works, radio was used with remarkable success. This substantially-built high-speed chord line will prove a valuable link in the 7,650-mile Rock Island system and an important economic asset.

International Diesel Train Workings

A FEATURE of modern train service arrangements in Europe is the increasing use of diesel-electric train sets running through across frontiers. Some of these, especially those in which customs and passport examinations are conducted on board, are cutting inter-city times to a greater extent than ever previously. Since last May a German three-car train, second class only and with restaurant car, has been running through between Dortmund, Cologne, Basle, and Zurich, using diesel power over the Swiss electrified lines. From next May, as described elsewhere in this issue, a similar German train will be introduced between Dortmund, Cologne, Liége, Charleroi, and Paris, crossing two frontiers en route. At the same date a French three-car train will begin operation between Paris, Brussels, Antwerp, and Amsterdam, again crossing two frontiers, and, incidentally, restoring the pre-war non-stop time of 3 hr. (actually 2 hr. 59 min.) over the 192·3 miles between Paris and Brussels. Other diesel trains between Bar-le-Duc and Frankfort, Strasbourg, and Salzburg, and Belfort and Berne, will greatly reduce the journey times to and from Paris. In Ireland there is the well-established non-stop "Enterprise" diesel service between Dublin and Belfast, also crossing a frontier, but in this case customs formalities take place at the two terminals.

Principles of Single Line Signalling

THE fact that in this country single-line sections often are far from being of the importance of most other parts of the railway system tends perhaps to create an impression that their signalling, apart from the problem of preventing head-on collisions, is of comparatively little interest. Any such idea would have been effectively dispelled by the address given on March 10 by Mr. R. O. Willmott to the Southern Region Signal & Telecommunications Technical Society. He had dealt with the constructional details of electric token instruments in an earlier lecture and devoted this second lecture to the signalling and interlocking of single-line stations, siding connections, and so on, which often present unusual features. Taking his audience step by step through the locking tables of typical layouts Mr. Willmott showed how quite a small difference in traffic working requirements could influence the arrangement of the locking. Problems associated with the use of auxiliary and no-signalmen instruments also were discussed, with the arrangements for switching out and protecting permanent way gangs working in single-line block sections. Some of the circuits described were specially interesting and representative of the ingenuity which has resulted in the enviable safety record of British single lines.

Power Signalling at Cologne

THE power signalling at Cologne, whose leading features are described in this issue, is typical of the progress made in this respect of recent years in Germany. The apparatus represents a marked change in practice from that met with there up to the war. The use of interlocked routes and signals for shunt movements, which had made some advance in prewar years, has become greatly extended and, of course, been found appreciably to facilitate traffic working. It also enables the old and often numerous point indicator lanterns to be dispensed with. In this installation there was introduced the system of train description under

which a designation of a train in the working timetable is exhibited on the illuminated diagram and moves along from section to section as the train proceeds, an arrangement applied in other work since. Another feature of the installation is the application of multiple-aspect signalling, hitherto hardly applied in Germany on main lines. The aspects, however, are somewhat different from those found in Great Britain. For many years Germany had made much use of power signalling, at one time more than any other country in Europe except perhaps Italy, and the experience gained with it has been effectively applied to the designing of the present equipment.

British Railways Rolling Stock Programme

AN analysis is given on another page of the locomotives and rolling stock scheduled for construction by or for British Railways during 1954. Of the steam locomotives, a notable feature is the prototype class "8" Pacific, and the biggest number to be built of any one class are 40 of the new heavy freight class "9" 2-10-0s, described in our January 29 issue. Thirty of the total of 237 steam locomotives have been allocated to private locomotive builders; these are 0-6-0 tank engines, of which 20 are being built by the Hunslet Engine Co. Ltd., and 10 by W. G. Bagnall Limited. Brighton Works is to turn out one Southern Region 2,000-h.p. main-line diesel-electric locomotive, and whilst construction of 54 British Railways standard diesel-electric shunters is shared by Derby and Darlington, five 200-h.p. diesel-mechanical 0-6-0s are being built by the Drewry Car Co. Ltd., and three 0-4-0s by Hunslet, and the North British Locomotive Co. Ltd. is supplying six 200-h.p. diesel-hydraulic locomotives, out of a total of 69 scheduled additions to British Railways diesel motive power. Contractors are building more than half—33,000 out of 53,000—of the wagons, and 560 out of the 2,750 coaching vehicles.

Five-Year Plan for the Nigerian Railway

THE Nigerian Railway is reported to have prepared a five-year development plan to cost £16,125,000, which is expected to be put into operation next year. Some £8,000,000 will be financed from the capital account and £8,125,000 from the renewals account. The largest item is the relaying of permanent way with heavier rail, on which £6,750,000 will be spent. New rolling stock will absorb nearly £4,500,000, and over £2,750,000 is to be spent on operating improvements such as station and yard remodelling, new station premises, and the construction of a Central Technical Education Establishment. Approximately £750,000 will be set aside for staff quarters, £500,000 for workshops machinery and another £500,000 for signalling and telecommunications.

Some important stations are already being remodelled, including Iddo (Lagos), Ibadan, Minna, Zaria, Kano, and Jos; the new terminus at Lagos was illustrated in our February 26 issue. It is proposed to remodel those at Offa, Jebba, Kaduna, Kafanchan, Makurdi, Enugu, and Port Harcourt. The exertions which the railway is making to increase the clearance of groundnuts, for export, were commented on in our March 5 issue; these are notwithstanding the great increase in the tonnage of local foodstuffs carried which has characterised the last few years' working. The year 1953 closed with total revenue of £10,515,000 and net profit of £2,176,000. Shortage of motive power, a disability under which the railway has laboured since the war, is being steadily made up as new locomotives are delivered, and shopping time is reduced.

A change in the form of administration of the railway has been foreshadowed for some time; last May Colonel R. B. Emerson was appointed Chairman & Chief Executive Officer Designate of the Corporation which it is intended shall administer the railway as an autonomous body. Since April, 1936, the railway's finances have been separate from those of the Government, and its aggregate net earnings have been over £20,000,000, of which £14,000,000 has been paid to the Government as interest on its money invested. Until the changeover takes place, Colonel Emerson occupies the position of General Manager in succession to Mr. D. C. Woodward.

The Nigerian Minister of Transport said in the House of Representatives this month that he had just received from the General Manager his recommendations for the establishment of the Corporation. When these have been examined and considered by the Government a White Paper will be published. It is understood that the General Manager also expressed the view that 75 per cent more traffic could be handled than in 1952-53, if certain improvements were carried out, though doubling was not necessary. The Kafanchan-Jos line is now being relaid, and the Port Harcourt-Enugu section of the Eastern line will be the next for relaying. Before the Kafanchan-Jos section was begun, 334 miles of the main line had been relaid with heavier section rail since the war.

British Transport Statistics

THE first of the thirteen four-week issues in 1954 of *Transport Statistics,* published by the British Transport Commission, that covering the four weeks to January 31, incorporates several changes occasioned largely by the Transport Act of 1953. The statistical information supplied is considerably less than in the series which ended with the thirteenth period of last year: only 12 tables are provided, compared with some 60 in No. 1 of the series for 1953, and the issue comprises some 20 pages, compared with 72. The price, however, has been reduced from 2s. 6d. to 1s.

The tables provided in No. 1 of 1954 show: traffic receipts grouped as (*a*) passengers and (*b*) freight, parcels, and mails, the former in respect of British Railways, London Transport (railway and road services shown separately), provincial and Scottish buses, and ships, whilst (*b*) is divided into the main British Railways traffic headings, and "others"; British Railways passenger receipts, as before, for the calendar month corresponding to the four-week period preceding that for which figures are given in the other tables (in this instance, the month of December, 1953, against Period 1 of 1954); London Transport passenger receipts for the four-week period (No. 1); provincial and Scottish bus receipts; British railway passenger journeys originating (in December), as in previous issues, followed by revenue-earning freight-train traffic originating and net ton-miles for Period No. 1; London Transport and provincial and Scottish bus passenger journeys; inland waterways tonnage and ton-miles; and the aggregate for 1953 of British Railways passenger journeys originating.

Subsequent issues of these statistics will contain information corresponding to that in this issue, except that each quarter the issue will be enlarged so as to contain the additional information previously provided upon British Railways, London Transport, and provincial and Scottish buses. These changes have been approved by the Minister of Transport & Civil Aviation. It is understood that there will be no change in the very full statistical information provided in the annual report of the Commission, except for some quite minor and insignificant alterations.

In the new conditions created as a result of the Act of 1953, the Commission now must have regard to the information which is required from transport operators generally by the various authorities, such as the Licensing Authorities, under various statutes and regulations. Some of this information eventually is published by the Ministry of Transport and by the Central Statistical Office and elsewhere, and the Commission will continue all such information as required. The curtailment of other statistics not required by the several authorities is felt by the Commission to be justified, on the ground that its activities in road haulage, in road passenger transport, and in docks and harbours cover only a part of the total operations in these sectors. The activities of British Road Services in particular are being drastically cut by sale of its assets under the Act.

More significant, perhaps, is the fact that the Transport Act of 1953 requires the Commission to conduct a highly

competitive enterprise, particularly in freight traffic. The Commission must regard itself first as a competitive commercial undertaking as well as a public transport service. Therefore, in publishing statistical information on its own receipts and carryings, it must bear in mind the existence of competition and not divulge information on its traffics of which advantage could be taken by competitors.

—	Four weeks to February 28		Inc. or decr.	Aggregate for eight weeks		Inc. or decr.
	1954	1953		1954	1953	
	£000	£000	£000	£000	£000	£000
Passengers—						
British Railways ..	6,829	6,461	+ 368	13,482	12,918	+ 564
London Transport—						
Railways	1,417	1,328	+ 89	2,858	2,722	+ 136
Road services ..	3,691	3,451	+ 240	7,364	6,963	+ 401
Provincial & Scottish buses	3,196	3,077	+ 119	6,459	6,284	+ 175
Ships	155	151	+ 4	349	376	— 27
Total passengers	15,288	14,468	+ 820	30,512	29,263	+ 1,249
Freight, Parcels & Mails—						
British Railways—						
Merchandise & live-stock	8,394	8,643	— 249	16,722	16,813	— 91
Minerals	3,427	3,443	— 16	6,960	7,035	— 75
Coal and coke ..	8,822	9,085	— 263	17,473	17,495	— 22
Parcels, etc., by passenger train ..	2,831	2,848	— 17	5,562	5,539	+ 23
Total British Railways ..	23,474	24,019	— 545	46,717	46,882	— 165
British Railways C & D., etc.	906	903	+ 3	1,778	1,768	+ 10
Others	6,418	6,383	+ 35	12,759	12,430	+ 329
Total freight, parcels and mails	30,798	31,305	— 507	61,254	61,080	+ 174
Total	46,086	45,773	+ 313	91,766	90,343	+ 1,423

The accompanying tables which give, in the new form, the preliminary receipts for the second period of the current year, do not specify, under "freight, parcels, and mails" ("others") the receipts from road haulage, ships, and canals. The small increase over last year in London Transport railway receipts may be attributable in part to the cheap evening fares introduced on January 25, though receipts must have been affected by the severe weather in the ensuing weeks.

The chief characteristics of the advance figures for Period 2 is perhaps the smallness of the differences between them and the corresponding receipts for the same period of last year. The falling off in railway merchandise traffic, though relatively small, is significant. This was the last period before railway, dock, and canal charges were increased on March 1.

Comparison with 1953 is very slightly vitiated by the fact of the dates of the four-week periods not corresponding exactly as between the two years, because of difficulty in reconciling the calendar with the principle of four-week periods.

PERCENTAGE VARIATION 1954 COMPARED WITH 1953

	Four weeks to February 28	Eight weeks to February 28
British Railways—		
Passengers	+ 5·6	+ 4·0
Parcels	— 0·5	+ 0·4
Merchandise & livestock	— 2·8	— 0·5
Minerals	— 0·4	— 1·0
Coal & coke	— 2·8	— 0·1
Total	— 0·5	+ 0·6
C. & D. services	+ 0·3	+ 0·5
Ships (passengers)	+ 2·6	— 7·1
British Road Services, Inland Waterways, and Ships (Cargo)	+ 0·5	+ 2·6
Road Passenger Transport, Provincial & Scottish ..	+ 3·8	+ 2·7
London Transport—		
Railways	+ 6·7	+ 4·0
Road Services	+ 6·9	+ 5·7
Total	+ 6·8	+ 5·5
Aggregate	+ 0·6	+ 1·5

Victorian Railways

THE report for the year ended June 30, 1953, which we have received from Mr. R. G. Wishart, Chairman of the Victorian Railways Commissioners, announces a notable improvement in the standard of service and increase in capacity of the system, mainly as a result of deliveries of large quantities of rolling stock and the increased availability of staff. By the end of the year under review 15 diesel-electric and 70 "R" class steam locomotives were in service, and had made possible faster schedules for many passenger and goods trains. The average mileage of each diesel was about 3,000 a week, and they were hauling heavier loads at faster speeds with lower operating costs than the steam locomotives they had replaced.

Branch-line services were also improved as a result of 37 diesel railcars being in service, and suburban services were intensified as more crews were available. Fast goods trains between Melbourne and both Mildura and Adelaide were accelerated by about 16 hr. in each case, and 48-hr. services were provided to and from Sydney and Adelaide. Noteworthy features in connection with these services were the introduction of weatherproof containers and special full-wagon-load rates irrespective of classification.

Despite the regaining of a considerable volume of higher-grade goods traffic from road transport, recession in trade caused a small reduction in the tonnage of goods and livestock handled. However, the ton-mileage totalled 1,262,543,564, a figure only 1·4 per cent lower than that in the record year 1951-52. New records were established in the moving of wheat, namely, 50,000,000 bushels, 20,000,000 being carried in nine weeks; nearly 5,000 wagons were loaded in one week, and the ability of the diesel locomotives to haul loads of 2,220 tons greatly assisted these movements. A record tonnage of coal was also handled. The increasing number of motorcars on the roads in the State, and a shortage of train crews early in the year, were responsible for slight declines in the country and suburban passenger-journeys respectively, but receipts were a little higher than in the previous year.

In the period 1946-47 to 1951-52 the disparity between the total amount of the increased costs beyond the control of the Railway Commissioners increased by £6,000,000 to £15,500,000, whereas the sum passed on to rail users by adjustments in rates and fares was £9,500,000. Accordingly, strong representations to the Government based on these facts secured sanction to an increase of about 35 per cent in rates and fares with effect from August, 1952. But there was still a serious gap between revenue and expenditure, and a further 20-25 per cent increase in low-grade freight rates was granted as from June 1, 1953. Even so, these rates are still very low, and though tonnages of low-grade and basic commodities are 69 per cent of the total tonnage carried, they provide only 47 per cent of the total revenue.

The principal results in working the railways in 1952-53 as compared with those for 1951-52 were as follow:—

	1951–52	1952–53
Average miles of line worked	4,687	4,678
Train-miles	16,972,801	17,690,216
Passenger journeys	165,130,762	162,856,992
Goods & livestock (tons)	9,204,410	9,191,615
	£	£
Passenger, parcels, etc., revenue	9,110,998	10,497,883
Goods, livestock, etc., revenue	13,461,991	19,380,471
Total earnings	26,089,432	33,661,611
Working expenses	29,611,867	34,007,878
Net earnings	3,522,425	— 346,267

A great deal of track rehabilitation and improvement was still needed, and with staff and materials in better supply, special efforts were being made to overtake arrears and provide a sound permanent way, so as to obtain the best results from the new rolling stock. On the Ashburton line doubling, earthworks were completed during the year under review, and other works were well in hand. In the important doubling and electrification of the Gippsland line, 21¼ miles of the doubling work were virtually completed and brought into use during the year, and 28 miles of the overhead wiring were erected. The substation work also was well advanced.

As well as the 15 1,500-h.p. diesel-electric locomotives out

of the 26 on order, 9 of the 25 main-line electric locomotives were delivered during 1952-53. They were ordered primarily for the Gippsland line, for which they have shown themselves amply powerful; they are fitted with dynamic brakes. Contracts had been let for 210 suburban electric coaches, motor and trailer. In the workshops, new high-capacity automatic welding plant was installed in three of the railway shops and ordered for a fourth.

During 1952-53 there were 275 accidents at level crossings involving 19 fatalities and injuries to 47 persons. There were no fewer than 210 collisions by motor vehicles with crossing gates closed against road traffic or with adjacent fencing, 60 per cent of them in daylight.

Railway Civil Engineering in the U.S.A.

A YEAR'S experience on U.S.A. railways enjoyed by two British railway engineers, and their views upon American practice as they found it, are embodied in the paper presented to the Institution of Civil Engineers for discussion on February 23, by Messrs. I. C. Campbell and N. J. Nicholls. They spent four months at the University of Illinois studying subjects allied to railway civil engineering, and eight months with various railway companies and at the Association of American Railroads (A.A.R.) Central Research Laboratory. The report describes the organisations of the A.A.R. and the American Railway Engineering Association (A.R.E.A.), including the A.R.E.A. " Manual of Recommended Practices & Standards," constantly kept up to date by 23 committees, each covering a different aspect of engineering work. Much of the work leading up to these recommendations is carried out in the A.A.R. Central Research Laboratory, in conjunction with universities and the research departments of individual railways; research projects are sanctioned by the A.A.R. on the recommendation of the A.R.E.A. committees.

The organisation of the Civil Engineering Department on most American railways is very similar to that in the United Kingdom, but the Civil Engineer generally reports to the Vice-President, Operation. He is responsible for all normal civil engineering work and also for the maintenance of electrical and mechanical equipment, apart from that under Motive Power and Rolling Stock, and for signals and telegraphs. Under him are assistants for bridges, track, new works, and electrical engineering; and he has a design staff.

Ordinary maintenance of track and structures and new minor works are under the District Engineer, and new major construction is carried out under a Resident Engineer, either by direct labour or contract. The District Engineer is responsible both to the Chief Engineer, for technical matters, and also to the Superintendent—who controls all operational, commercial, and technical activities in his area—for financial and policy matters. On the Pennsylvania Railroad, however, with its three Regions, a different system prevails.

The flat-bottom rails, universally used in America, are 39 ft. long and weigh 100-132 lb. per yd., though 155 lb. rails are used by a few companies; they contain 0·69-0·82 per cent carbon and 0·70-1·00 per cent manganese. Shatter cracks have almost been eliminated by controlled cooling. Rail failures usually result from shelly rail condition and fatigue near the joint, and have been reduced considerably by the use of rail-testing cars of various types, operating on either the electro-magnetic or electro-inductive method. Supersonic portable detectors are used for inspecting rail-ends for flaws. Long welded rails up to a mile or more in length are becoming increasingly popular.

All sleepers are of wood, mostly oak, gum, Douglas fir or pine, as reinforced-concrete sleepers have not proved successful. It is recognised that sleeper renewals are necessitated much more by mechanical wear than by deterioration and many measures are taken to combat the former. Ballast consists of all the normal and some unusual materials; its size is limited to 2 in. or 1½ in. Conventional methods of track drainage are used, and grouting is the commonest remedy, applied on a wide scale, for the stabilisation of soft spots in formation and side-slopes.

Standard crossings are from 1 in 8 to 1 in 20; the latter, giving a 52-ch. rad. turnout, necessitates a speed restriction of 45 m.p.h. Switch lengths vary from 16½ ft. to 45 ft. To protect switches from wear at busy but slow-traffic turnouts, cast manganese point-guards are bolted to the outsides of the stockrails. Crossings are of three types: (1) the most common " insert " type, with insert and wings cast in 12 per cent manganese steel and embraced on each side by adjoining rails forming straps; (2) the complete solid manganese cast crossing, which, however, is inclined to crack, and, having no rails acting as securing straps, may fail suddenly; and (3) the built-up rail crossing, but having continuous blocks from the ends of the wingrails to the throat; it tends to wear more rapidly, though this wear has been reduced by heat-treating the crossing before and after fabrication.

Essential day-to-day track maintenance is carried out by small length-gangs; in winter 10 track miles of main line may have only a ganger and two or three men, but during the summer months the size may be doubled. On busy sections of line the use of motor trolleys is too dangerous, and men and materials are moved by road. Normally, the ganger or track-walker inspects his length only twice a week. All major maintenance work is done by large highly-mechanised gangs, each with a compressor operating up to 16 hand tamping tools.

Air tamping tools are considered the most satisfactory, but the tamper with individual power unit is not favoured, even for small gangs. Several types of multiple tamper are used for the heavier jobs, and all ballast-cleaning except at points and crossings is done mechanically by extra gangs.

Track renewals are not usually undertaken as a whole, and pre-assembled track is not used. Rails and fastenings are renewed at one time, but the spot renewal of sleepers is on an annual programme, and ballast is rarely renewed. Rail renewal is a fully-mechanised production-line job. In fact, a large gang, perhaps 100-strong, works on one rail at a time with this plant in series; four spike-pulling machines, power-wrenches, a 6½-ton diesel crane, four rotary adzing machines, a soleplate placing machine, spike hammers, and rail-hardening equipment. It may be strung out over a mile. If possession of the track is available, some 2½-4 miles of single rail can thus be relaid in an 8-hr. day, including travelling time. If trains have to be passed, the rail gap is closed up and the crane lifts all the light machines clear of the track, and then runs at 30 m.p.h. under its own power to the nearest siding.

As a result of experience of costly and difficult repair works upon reinforced-concrete bridges constructed in the 1920s, this type of bridge is unpopular in America. As steel and timber are so readily available, the need for pre-stressed concrete bridges has not yet arisen. Because of doubts as to the fatigue strength of welded steel plate girders, such girders are almost all of riveted construction. However, this question is being investigated.

Some American practices might be worth considering for adoption in this country. They include the free movement as between the rail and soleplate, as it may reduce the movement of the sleepers in the ballast, and, therefore, maintenance. A slight—but not a half-rail—staggering of rail-joints might well reduce wear on joints and rolling stock without excessive lurching. If the cost of manganese-steel crossings can be reduced to about that of built-up carbon-steel crossings, their longer life and lower maintenance costs should make them economically desirable. Long-welded rails, justified in America by reduction in maintenance cost and by their longer life, seem to give no trouble in temperature variations; provided the track is well anchored and other precautions are observed, there would seem to be a good case for their extended test in Britain.

Fully-mechanised " area " gangs working to a detailed programme under closer supervision might well prove economical in the U.K. In normal conditions, the inspection of flat-bottom track twice a week should suffice.

XUM

A case for part renewal of track is put forward on grounds of reducing eventual waste of material, line possession, and speed restriction. The advantage of spot-renewal of sleepers is that it can be carried out by an area gang, only the unserviceable sleepers being renewed; the removal of a serviceable sleeper from one place to another is considered to reduce its life by five years. On the other hand, part-renewal entails a more-extensive ballast-cleaning programme. To reduce line-possession, greater use of off-track mechanical plant and telecommunications between signalmen, train-crews, and gangs are suggested.

Conclusions arrived at by the A.A.R. and A.R.E.A. on the deterioration of concrete structures might well be studied when future bridge policy is being considered in the U.K. Moreover, their bridge-testing equipment and methods might be adopted, and analyses of the results might prove useful in framing future bridge-testing programmes. Investigations into cumulative fatigue now in hand at the University of Illinois may throw new light on this vital but obscure subject.

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

Experiment in Traction Practice

March 5

Sir,—I can only say that I agree with everything said by Mr. Harris in his letter published in your issue of March 5. It does serve, moreover, to point out two dangers in standardisation, i.e., carrying it too far, and embarking on it without adequate research. A bogie which rides well in a multiple-unit electric train will undoubtedly do so in a steam train; only the converse is untrue. It is sad that the products of the British electrical industry sometimes get a bad name through installation in rolling stock of British Railways design, if not construction. Perhaps the answer is for British Railways to give up its own construction, and support our native industry and to provide it with much needed opportunities to prove new ideas.

Yours faithfully,

JOHN RODGERS

"The Cottage," 132, Worrin Road, Shenfield, Essex

Publicising Cheap Fare Facilities

March 3

Sir,—The mid-week cheap fares operating between Liverpool, Manchester, and so on, and the North-East coast, are approximately the same as the competing bus fares, and are available for return within a fortnight.

It would be interesting to hear the extent of the success of all these efforts. I wish that the railways were more enterprising in bringing these facilities to the notice of the public. Several of my friends have availed themselves of the facilities mentioned, but only after my having pointed them out. If one has a shop, one doesn't advertise *inside* what one is selling. The miserable advertisements in our local Press are most unattractive.

Yours faithfully,

G. BRIAN FINCH

296, Chester Road, Whitby Ellesmere Port, Cheshire

[We are informed that, considering the time of year, the London Midland Region has no reason to doubt from the result that the facility is well known. Between October and January last these reduced fares were advertised on several occasions in 12 newspapers in the Liverpool area, and when first introduced they were referred to in their editorial columns. Thousands of handbills were distributed and posters displayed.—Ed., *R.G.*]

Death on the Roads

March 9

Sir,—In the road versus rail controversy and the enthusiasm with which road users calculate fantastic savings in the national economy if they can persuade the Government to spend vast sums of money on new roads, I sometime wonder what value they put on human life, having regard to the numbers killed or seriously injured on the roads almost every day.

The following is a typical example of reports which appear almost daily: "A lorry ran 100 yd. downhill, uprooted a tree, and crashed into the front of a house in Eglinton Road, Plumstead, S.E., yesterday. No one was injured."

It seems strange that apparently these huge lorries can traverse the country without careful periodical overhaul.

When we repaired private owners' railway wagons, railway inspectors were stationed all over the country for the specific purpose of ensuring that the trucks were safe to travel, and they had authority to stop any wagon, anywhere, which, in their opinion, was not safe to travel. One wonders what inspection takes place of the brakes, for example, on these lorries which rush about the country.

Yours faithfully,

DUNCAN BAILEY

Charles Roberts & Co. Ltd.,
Railway Wagon Works, Horbury Junction,
near Wakefield

Modern Locomotive Practice

March 13

Sir,—I have read with considerable interest the article in your March 5 issue. In particular I would like to comment on the suggestion to adopt the three-cylinder compound arrangement for a large Pacific locomotive of modern design. Attractive as this proposal appears, I think that on close investigation it would prove to be useless in practice, because of limitations of the loading gauge, which will restrict the maximum diameter of the outside cylinders to approximately 21 in.

The Deeley compounds of the old Midland Railway were probably the most successful and efficient three-cylinder compound locomotives to be produced in this country, undoubtedly due, in large measure, to the ratio of expansion as between high and low pressure engines being much closer to the optimum value than is possible with a four-cylinder compound arrangement. These engines carried a single h.p. cylinder of 18 in. dia. with two low pressure of 21 in. outside the frames.

To accommodate outside cylinders of this size it was necessary to cut away the main frames to make room for the cylinder barrels, so as to avoid exceeding the outside loading gauge. The boilers were pressed to 225 lb. per sq. in. which is still regarded as in the high pressure category, and the cylinder h.p. that could be developed was, therefore, somewhere near the maximum that can be expected from this particular arrangement.

The tractive effort of these engines was in the vicinity of 24,000 lb., with an overall weight of slightly over 60 tons, and by present day standards the Deeley compounds are regarded as small engines.

It follows, therefore, that apart from any further increase in cylinder h.p. that could be obtained from employment of improved valve gear and increased boiler pressure up to say 250—275 lb. per sq. in., which might lead to troubles in other directions, there seems little chance of producing an engine with sufficient power to justify the Pacific wheel arrangement when using the three-cylinder compound principle.

Yours faithfully,

A. R. S. RICE

118, Wrottesley Road, Tettenhall, Staffs.

THE SCRAP HEAP

Dead Right

(*Heard in a children's clinic at Hull*)

First mother: My child's weight goes up and down, down and up, week by week. It's most disturbing.

Second mother: Don't worry. You can't trust the scales here. Alf weighs mine at B——— Station parcels office. Railway scales have got to be dead right.

Steadfast Service

A lady called at New Barnet Station and was anxious to learn the names of the drivers working certain business trains to and from London, on which her daughter travels daily, so that she could show her appreciation for their steadfast service by making them a gift.

The stationmaster, Mr. R. V. Fox, explained to her that very many men were involved, and that these drivers were based at Hitchin and Kings Cross, also that there would possibly be Hatfield and Hornsey men concerned. The trains mentioned were the 7.24 a.m. Baldock to Kings Cross, and one due at New Barnet about 6.30 p.m., the latter being somewhat vague.

She finally decided that she would like to give £1 to a charity having some connection with the welfare of engine drivers' children, and Mr. Fox promised to send this along to the District Motive Power Superintendent, Kings Cross. The money was given on her behalf to the Railway Servants' Orphanage at Derby.—*From the "British Railways Magazine" (Eastern Region).*

Tramcar as Scoring Box

The original tramcar built in 1884 by Mather & Platt Limited for the Bessbrook & Newry Tramway in County Down, which was closed some years ago, is depicted in the accompanying illustration. The photograph was taken from the cricket field at the builders' Park Works at Manchester, where the car, until the construction of the new pavilion, was used as a cricket pavilion; it is now used as a scoring box. Some of the electrical equipment, as originally supplied, can be seen. In the background are the Park Works.

As she was Spoke

An article in *The Lady's Newspaper* for October 6, 1849, describing the opening by Queen Victoria of the High Level bridge at Newcastle-on-Tyne of the York, Newcastle & Berwick Railway, said that the royal carriage belonged to the London & North Western Railway, and was "a most sumptuous piece of itinerating accommodation."

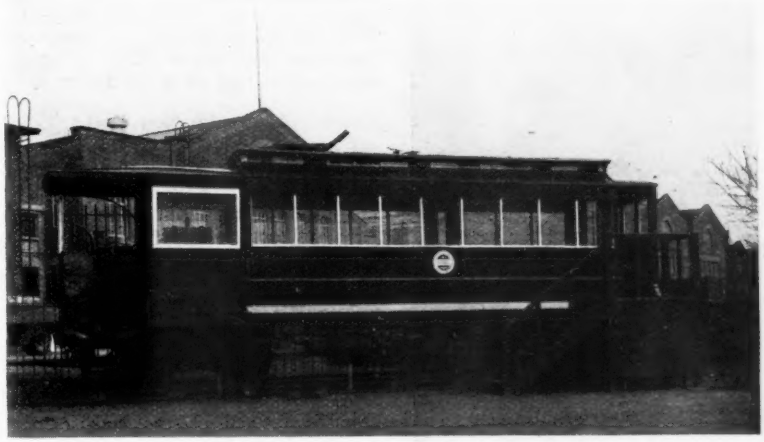
Pleasures of Travel

The railway journey to Kirkcaldy, which is about 15 miles from Edinburgh as that tireless crow flies, is one which always fills us with a great deal of pleasure. First of all you go due west for about nine miles, then you head north, then you close in gradually on Kirkcaldy, working in an easterly direction.

You can of course, if you prefer to add to the mysteries of travel, drive by the Queensferry passage, or, if you are in a hurry, by the Kincardine road bridge. We plump for the train journey, however, since it is less liable to any sudden outbursts of nature or of man.

If you travel by slow train you may be fortunate enough to pick a compartment with five reproductions of paintings by distinguished artists. You then, for the price of a day return, have the opportunity to study the fine arts, to admire the Forth Bridge, and to cast an appraising glance at the gay resort towns of the south-west Fife littoral, such as Aberdour and Burntisland.

Or you may, as we did, fall asleep and let Kirkcaldy suddenly leap on you like a glorious olfactory vision, or, to put it another way, like a glorious linolfactory vision.—*From "The Scotsman."*



Tramcar built in 1884 *by Mather & Platt Limited for the Bessbrook & Newry Tramway now used as a scoring box in the cricket ground of the builders' works at Manchester*

Swift Sea Rescue

Details of a remarkable rescue by the crew of a British Railways Channel packet have been made available by Mr. R. P. Biddle, Docks & Marine Manager, Southampton.

At 12.25 p.m. on March 11, whilst s.s. *Brighton* was 10 miles out from Dieppe en route for Newhaven, a man passenger fell overboard from the boat deck amidships. The main engines were stopped, a lifebuoy and light were released, and the *Brighton* turned into her wake.

The timetable of the rescue then continued:

12.31—Lifeboat away
12.33—Passenger picked up
12.35—Lifeboat returned to ship; man, crew, and lifeboat hoisted aboard
12.37—Course resumed at full speed.

A rescue with such speed — within 12 min.—and efficiency is believed to be unique in the history of shipping.

The officer and crew concerned paraded at Newhaven next day and were congratulated on behalf of Mr. Biddle on their seamanship.

Resistance Movement

This comic age of ours today
Gives me regretful cause to say
One can't go far, unless one's rich
Enough to grease the palms that itch.
Listen to me while I enleash
My sordid saga of bakhsheesh.

The postman and the paper boy,
Who bring more ruefulness than joy,
The dustman and his little lot,
(We pay enormous rates—for what?)
The taximan—all seek largesse.
Waiters won't be content with less
Than ten per cent, and who more shy
At all our railway termini
Than certain porters, who will fade,
Chameleon-like, into the shade,
Unless the "propects" are just right?
(Viz., when a boat train comes in sight.)

Yet those who merit our regard
Find virtue is its own reward;
I have in mind old Driver Jim—
Who ever dreams of tipping him?
Hundreds of lives on him depend
For safely reaching journey's end,
Yet no one passes round the hat
To benefit a man like that.
The same applies, in some degree,
To worthy souls like you and me;
My goodness! There would be a fuss
If they sent round the hat for us!

Then, let us form a doughty band,
These devious onslaughts to withstand
And check this paying through the nose
By firmly claiming *quids* for *quos*!

A. B.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

VICTORIA

Colac-Ballarat Service Withdrawn

The service between Colac and Ballarat has been withdrawn. It was worked from Colac on the main South-Western line, the physical junction being at Irrewarra. The line was 60 miles long and ran due north through Cressy and Newtown to Ballarat on the main Western route to Adelaide. The mileage closed is 41 miles, as the northern end from Newtown to Ballarat is still used by another branch service.

The Irrewarra-Ballarat line, part of which dates from 1889, was one of two lines which bisected at Cressy. The other line is that extending from Geelong via Cressy to Ararat, both of them cross-country lines linking the main South-Western with the main Western route, although at different points. The Geelong-Ararat line, although now closed to passenger traffic, carries at times heavy inter-State freight traffic to and from South Australia as an alternative route to the main line through Bacchus Marsh.

NEW SOUTH WALES

Diesels on Freight Transfer Service

From the beginning of November last until the end of January, six of the 10 Paxman-engined 1,000 b.h.p. B.T.H. diesel-electric locomotives were introduced gradually into freight transfer service in the Sydney area. The first unit had given about 1,200 hr. of service by the end of January.

Royal Train

The Queen and the Duke of Edinburgh travelled by rail from Sydney to Newcastle in the course of their tour of the State. The Royal train was composed of the Governor-General's car, the Premier's car, the Railways Commissioner's car, an air-conditioned buffet car, and a second-class car. The Queen travelled in the Governor-General's car, which was fitted specially with an individual air-conditioning plant. The colour scheme was a deep Tuscan red with gold lining for the coaches and Royal blue with gold lining for the two Canadian Alco diesel-electric locomotives Nos. 4001 and 4002 which hauled the train.

WESTERN AUSTRALIA

Diesel Locomotives on Test

Dynamometer car tests have been undertaken with one of the 18 Paxman-engined 410 b.h.p. diesel-electric shunting locomotives recently delivered. Three of these locomotives are now in service; the first has 1,500 hr. to its credit. Tests have also been carried out with these locomotives on branch line passenger work.

UNITED STATES

The "Full-Crew Law"

The powers of independent action possessed by the States in the U.S.A. has resulted in considerable variations in the laws laid down by individual States governing railway operating methods. In 1913 New York State legislature enacted what has become the "full-crew law." It requires that every freight train of more than 25 bogie wagons must carry a third brakeman; that there must be a minimum of five men in all shunting operations; and that three men are necessary for all light locomotive movements. The same law lays it down that baggagemen must be provided, in addition to brakemen, on all trains carrying baggage.

It is computed that during 1952 the cost of these excessive train-crews to the railways serving New York State was some $5,000,000. Moreover, neighbouring States do not lay any such onerous requirements on their railways, and the railways in New York State contend that the traffic is operated in those States with no less safety and efficiency. In the forthcoming session of the New York State legislative the railways of the State are joining forces to seek repeal of this statute.

CANADA

Budd Railcars on C.P.R.

An order for another self-propelled diesel railcar has been placed by the C.P.R. with the Budd Company, Philadelphia, for service on the Toronto-Detroit line.

In November the C.P.R. placed two of the cars on a daily 4 hr. 20 min. schedule for the 229 miles. They have been heavily patronised. The third car will join the two now in service when it is delivered in April. All are the RDC-1 type, seating 89 passengers and able to run up to 85 m.p.h.

Other Budd cars on the C.P.R. run from Montreal north through the Laurentians to Mont Laurier, and from North Bay to Angliers in Ontario.

ARGENTINA

Northern Transandine Service

For the first time since the completion of the Northern Transandine line between Salta and Antofagasta (Chile), a direct passenger service has been introduced between Buenos Aires and Antofagasta. Passengers leave Buenos Aires on Tuesday afternoons, arriving at Salta on Thursday mornings and transfer to the international train which arrives at Socompa, the border station, on Friday afternoons and at Antofagasta on Saturday mornings. The return trip is made from Antofagasta on Thursday nights, arriving at Buenos Aires on Mondays. Two sets of rolling stock are used, one Argentine and one Chilean. Customs examinations are made on the train.

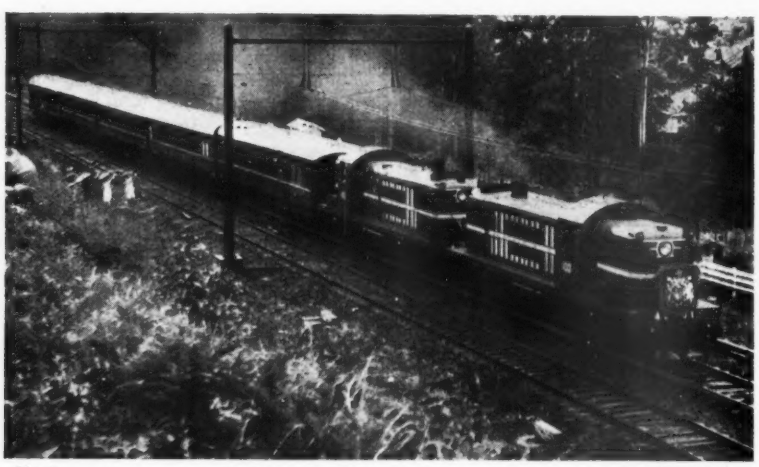
Trials with New Fuel

Extended trials are being carried out on the General Roca Railway with briquettes of wood charcoal and asphaltic residues of the petroleum industry. It is stated that the fuel has a high calorific value, is not affected by rain or moisture, and is highly suitable for use by locomotives instead of coal.

FRANCE

Locomotive Breaks Mileage Record

In July, 1953, a 2-D-2 electric locomotive, from Paris-Sud Ouest depot, established a world record for distance covered in one month—31,357 miles. This performance was accom-



Photo] [H. V. Palmer

New South Wales Railways Royal Train diesel-hauled on its run between Sydney and Newcastle

plished in everyday traffic conditions by a locomotive put into service in August, 1942, and which by July 1, 1953, had covered a total of no less than 1,292,449 miles.

The trains hauled by this locomotive between Paris and Irun during the record-breaking month were the "Sud Express," with an average weight of 500 tons, and trains Nos. 31 and 32 of an average weight of 825 tons on part of their journey and of 875 tons on another part. The "Sud Express" averages 87 m.p.h. over a short section of the journey and runs non-stop between Paris and Bordeaux (391 miles). The other two trains average 81 m.p.h. for part of the journey.

WESTERN GERMANY

Basle - Karlsruhe Electrification

In December the German Federal Railways placed the first orders for the civil engineering works for the electrification of the Basle - Karlsruhe main line. The amount available for the electrification scheme is at present limited to 135,000,000 D.M. (about £12,000,000). Nearly one-half of this amount is earmarked for the acquisition of electric locomotives and motor vehicles. In keeping with the traction system on the existing South German and Swiss electrification systems, a frequency of 16⅔ cycles will be used.

Work will start at Basle and proceed northwards so that the Basle - Freiburg section will be electrically operated by May, 1955, the section to Offenburg by May, 1956, and the line all the way to Karlsruhe by October, 1957. The work will include the installations of 200 km. of high-tension cables, 850 km. of overhead wiring and four substations with altogether 13 transformers. Civil engineering works, including the lifting of bridges and the lowering of tracks, will be required at 35 points. The line will be equipped for a maximum speed of 160 km.p.h. (100 m.p.h.).

IRELAND

Diesel Car in West Cork

A diesel railcar unit has made an inaugural run over the West Cork branch line between Albert Quay (Cork), Skibbereen and Bantry, taking in the 10-mile branch from Gaggin to Clonakilty. A number of C.I.E. engineers and officials made the journey, which was stated to be an experiment. Public bodies and associations in Clonakilty, Skibbereen, and Bantry have requested the introduction of a diesel service to replace the existing trains.

Double-Deck Sheep Wagons Wanted

At a meeting of the Kerry Agricultural Committee in Tralee it was decided to send a resolution requesting the C.I.E. to construct double-deck wagons to carry sheep. The meeting expressed the opinion that such wagons would reduce transport costs, and induce buyers to use railway services and to attend fairs.

Hill of Howth Line

It now appears that the G.N.R. will operate the last electric tramcars in Ireland. It is understood that it will be approximately two years before the road can be made suitable for bus operation, at a cost of £200,000, and until then the tram service to the top of the Hill of Howth will remain.

Publications Received

Monsieur X Va en Justice (Mr. X in Court). By Lionel de Tinguy du Pouët. Paris, 9e: Editions de la *Revue Politique des Idées et des Institutions*, 22 rue de Châteaudun. 10⅝ in. × 7½ in. 14 pp. No price stated.—Mr. X personifies the management of the French National Railways, and in this pamphlet he is supposed to be in court to answer charges of incompetent administration, and allegations of sinister designs on the liberty of competing forms of transport. The case for the defence is skilfully analysed, leading to the conclusion that some of the blame for recurrent deficits must be imputed to failure of direction by successive Governments in formulating a plan for transport as a whole. Some of the difficulties of the situation within which the railways are at present obliged to work are the subject of an editorial note this week.

Electric Traction Handbook (Control). By R. Brooks. London: Sir Isaac Pitman & Sons Limited, Parker Street, Kingsway, W.C.2. 8¾ in. × 5½ in. 322 pp. Price 30s.—Control circuits and apparatus for electric traction possess a variety of detail to which the usual general description of a locomotive or motor coach can rarely do full justice. A book such as this, devoted to control circuits and equipment for d.c. and a.c. systems, fills a gap which has become increasingly noticeable as practice has been elaborated in recent years. Although more space is given to d.c. schemes, all forms of a.c. control are outlined, including those at present in use for single-phase traction at the industrial frequency. In addition to numerous circuit diagrams, presented to show essential features lucidly and unobscured by unnecessary detail, many items of equipment are also explained in diagrammatic form. The photographic illustrations cover all the major forms of control apparatus, including current collection and protective gear. Diesel-electric, gas-turbine electric, trolleybus, and tramcar practice is also dealt with. A useful feature is the inclusion of block plan views and sections showing representative lay-outs of control equipment in motor coaches and locomotives. The book can be recommended as a companion to the study of electric traction both for those in the transport industry and the general engineering reader.

Railways in Defense and War. A Bibliography. Washington, D.C.: Association of American Railroads, Bureau of Railway Economics Library. Compiled by Helen R. Richardson, Reference Librarian. 9 in. × 6 in. 262 pp. Paper covers. No price stated.—The Bureau of Railway Economics, Association of American Railroads, owns a large transportation library containing over 350,000 books, periodicals, and other documents. In view of the public interest and concern in national defence in U.S.A., the library has published a bibliography of material relating to railways in times of emergency; this covers the period from 1828 to 1953 and is a stout volume of 260 pages. It was compiled by the Reference Librarian, Miss Helen R. Richardson, under the direction of the Librarian, Miss E. O. Cullen. On opening the catalogue at random, we noticed an entry referring to the special war transport number of *The Railway Gazette* in September, 1920, and further inspection showed that many of our articles on railway transport in both world wars have also been included. The catalogue is a good example of the thorough manner in which the Bureau of Railway Economics deals with transport questions.

Martonair Pneumatic Equipment.—Martonair Limited, of Richmond, has published a section of its pneumatic equipment catalogue dealing with small cylinders and valves useful for jig and fixture designers. The catalogue is illustrated with photographs and diagrams.

Steel Pipes for Water, Gas, Sewage, and Air.—A current edition of the catalogue (Section "M") of steel pipes produced for water, gas, sewage, and air by Stewarts and Lloyds Limited, contains many useful tables and diagrams as well as articles on the use and manufacture of steel pipes; it is copiously illustrated. A collection of the formulæ most frequently used, with examples, is also included. A list of tubular steel products is supplied covering a great variety of items.

G.N.R. (I.) Motor Coach and Train Tours.—The Great Northern Railway Board has issued a leaflet giving details of day tours by motor coach and train, the latter including the diesel sets, from Dublin and other urban centres and from the coastal resort of Bundoran, during the 1954 holiday season. The tours cover all parts of the G.N.R. and adjacent territory, such as the Carlingford Peninsula, the Mountains of Mourne, Armagh, Knock Shrine, and Donegal. A special leaflet lists the programme of tours from Dublin during An Tostal, from April 18 to May 9.

XUM

Atlantic-Council Bluffs Chord Line, C.R.I. & P.RR.

Through route from Chicago to Omaha shortened

THE Chicago, Rock Island & Pacific Railroad administration recently completed and brought into use a new 33·86-mile cut-off in Iowa from Atlantic to Peter near McClelland, on the Chicago Great Western Railway, over which the Rock Island has running powers to Rigg, within a mile of its new East yard at Council Bluffs. With the additional construction of this latter 0·81-mile link, the Rock Island now has a direct route from Atlantic to Council Bluffs, 46·33 miles long, as compared with its old route via Walnut, Avoca, Shelby, Minden, and Weston, a distance of 56·54 miles.

Not only is there this 10·21-mile saving in haulage of all through traffic, but speeds up to 79 m.p.h. are permissible throughout, except at the junctions with the C.G.W. and at Council Bluffs, whereas there were many speed restrictions on the old route to 45 m.p.h. There are also reductions in (*a*) ruling gradients from 1 in 100 to 1 in 125, (*b*) in curvature by 1,640 deg., (*c*) in number of curves by 40, and (*d*) in rise-and-fall by 131 ft.

Forty Route-Miles Closed

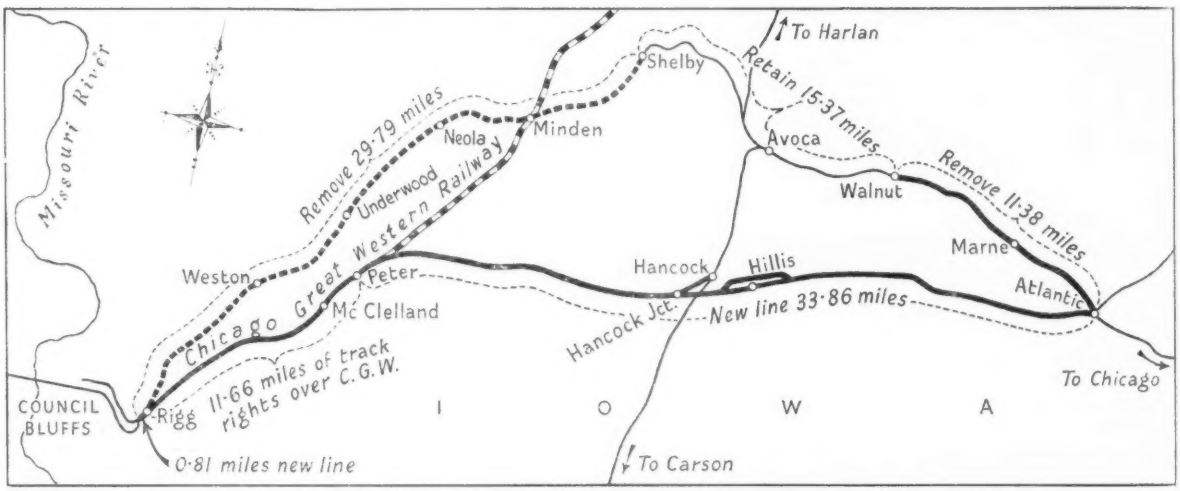
Moreover, the new route enables no fewer than 41·17 miles of old line to be closed and taken up without serious detriment to transport. For, with the removal of the first 11·38 miles of the old route from Atlantic to Walnut, the Walnut-Avoca-Shelby section of the original line will remain to serve those places, being worked as two branches of the company's existing line from Carson through Hancock and Avoca to Harlan. The 29·79-mile Shelby-Minden-Weston-Rigg section of the former route is, apparently, sufficiently near and parallel to the Minden-McClelland-Rigg line to warrant its being abandoned. Another point considered was that the straightening of certain waterways had recently been subjecting a number of bridges on the old line to scour, and the administration would have had to undertake a major bridge-rebuilding scheme, had that portion of the line not been able to be closed.

Construction work began in October, 1951, at four points, and entailed the excavation of over 7,000,000 cu. yd. of earth. Although the new line is single throughout, except for two passing loops, cuttings are 34 ft. wide at formation level, permitting of the use of tractors and scrapers for maintaining the side drains. Embankments are 24 ft. wide across the shoulders, and the side slopes of both cuttings and banks are 1½ to 1. In the deeper cuttings and higher fills, 10-ft.-wide benches were made on the slopes every 20 ft. in height. The road-bed was surfaced first with 8 in. of zinc refuse, then with 10 in. gravel, and finally with 4 in. slag ballast.

Platelaying was carried out by an 80-men gang at an average rate of a mile a day. The track consists of 115-lb. rails, seated on double-shoulder bearing-plates and secured to 8 ft. 6 in. oak and gum sleepers. The bridging on the new line—and that on the old line in brackets for comparison—consists of 15 (19) steel bridges, 12 concrete culverts, 10 ft. × 10 ft. and larger, and many corrugated-iron pipe culverts. Thirteen of the bridges are up to Cooper's E 72 loading and the other two to E 60.

The two crossing loops are (1) at Hillis, near Hancock, three miles long and having two crossovers at its mid-point, and (2) near Peter Junction, McClelland, 6,750 ft. in length. As compared with 28 level crossings on the original line, there are 16 on the new, as well as 10 road overbridges and 5 road underbridges. There were 20 timber trestle viaducts on the original route.

The operation of the new line is governed by C.T.C., centred upon Council Bluffs, and colour-light signals, and, thanks to the almost complete lack of speed restrictions, high-speed running is possible practically throughout. An average of about 40 per cent higher tonnage rating is possible on the new as compared with the old line, and maintenance costs are expected to be very much lower.



Map showing the new chord, original, and connecting lines between Atlantic and Council Bluffs

SHORT CRUISES BY S.S. "FALAISE."—Bookings are now open for the cruises by British Railways cross-Channel steamer *Falaise*, which will be operated again this year, as from the weekend of May 7. Seven cruises have been arranged for this season, including a mid-week cruise to Rouen and Havre and a long Whitsun weekend cruise to Rouen and Jersey. Passengers leave Waterloo by special train at 7.20 p.m. each Friday, and arrive back in London at 9.28 a.m. the following Monday, and for the midweek cruise May 10-13. The Whitsun cruise will be from June 4 to June 8. Fares from London will be from £13 13s. for the Whitsun Cruise and from £10 10s. for the others (£12 12s. and £9 9s. from Southampton), and include accommodation and all meals on board. Shore excursions will be arranged. Passports are essential

Sixteenth International Railway Congress

Protecting Electric Traction Installations

Apparatus for safeguarding fixed equipment and motive power from electrical faults or disturbances

THE practice of countries on the Continent of Europe and their colonies in methods of protecting electric traction installations and motive power is summarised in a report by Monsieur J. F. M. De Boeck, Chief Motive Power & Rolling Stock Engineer of the Belgian National Light Railways Company, on Question 11 before the International Railway Congress Association. His terms of reference covered safeguards against overvoltage, overloads, short circuits, and lightning.

General use is noted of maximum current relays acting on circuit-breakers for the protection of substation transformers. Usually there is a fixed time delay for dealing with overloads and an instantaneous device for short circuits. Some thermal relays are used on the S.N.C.F., but there has been difficulty in regulating their operation. Methods are described for ensuring that the maximum overload capacity of the transformer can be used before the thermal devices operate.

Rectifier Protection

Attention is drawn to the widespread use of biased grids for arc suppression in rectifiers, but it is considered that whether or not this system is adopted, high-speed reverse current cathode circuit-breakers should be included with rectifiers of 1,000 kW. and above. It is good practice to control feeder circuit-breakers by means of maximum current relays in the cathode circuits, set to operate at a slightly lower value than the normal overload capacity to which the H.T. relays are adjusted. This system minimises opening of the H.T. circuit-breakers.

A method adopted by the Belgian National Light Railways when changing from glass bulb to sealed tank rectifiers has been the use of contactors in the cathode circuits, operated by the quick-acting anode relays which trip the H.T. circuit-breakers. Considerable saving has been achieved compared with the provision of two high-speed breakers.

Certain rectifier groups on the S.N.C.F. Paris-Lyons line use control grids as load limiters, but the system has not been perpetuated in later work. Some administrations report the automatic switching in of standby rectifiers or converters to meet load increases. Protection against the effects of overheating in rectifiers depends in general on stoppage of a cooling system motor being made to operate H.T. circuit-breakers through auxiliary contacts on the motor protective gear.

Voltage limiters are widely installed. At S.N.C.F. substations they are connected between the anodes and the negative pole, and are arranged to strike at between 5,200 and 6,000 V.; their discharge capacity is 100 amp. in 25 microseconds.

Contact Lines and Feeders

The reporter notes the almost exclusive use of non-insulated overhead feeders by the administrations replying to him. Of the a.c. lines represented in the report, the German State Railway described its two-step system for protecting contact lines, in which the first relay opens the circuit-breakers in about 0·3 sec., and is supplemented by a second relay which operates after 0·5 sec. if the first fails to act. All d.c. systems replying, except the Paris Metro, use high-speed circuit-breakers, mostly depending for their operation on the holding flux being neutralised by an opposing flux set up by the main current.

Four administrations reported that all their feeder circuit-breakers had automatic reclosure devices, and several others had adopted the system at numerous substations. On the Nord-Milano, Italian State, French National, and Belgian National Railways the basis of operation is a fixed number of reclosures before the breaker locks open. Elsewhere the line resistance is tested automatically and is made the deciding factor. Although the S.N.C.F. considers that automatic resistance testing "offers, in practice, more drawbacks than advantages," the Belgian National Light Railways have standardised automatic testing for all rectifier substations and have extended it to some rotary converter installations.

Lightning protection at substations now generally takes the form of devices using semi-conductors, but the Belgian National Light Railways continue to install a 4μF condenser, shunted by a discharge resistance, between positive and earth.

Substations in Parallel

All but two administrations replying operate substations in parallel to reduce voltage drop and give greater security of supply. Track paralleling cabins are a common method of ensuring protection when faults occur at points remote from the supply. On the Belgian National Railways a system of polarised circuit-breakers is used in these cabins so that when a fault develops, the section of track from which power is cut off is as short as possible. The French National Railways, however, interlock circuit-breakers feeding a common section by means of an auxiliary circuit which is included in the telephone cable. When any breaker trips, therefore, all others associated with it open also and the risk of feeding into a remote fault is avoided.

Three administrations report satisfactory experience with a detector relay for short-circuits which is claimed to be sensitive to the existence of shorts or faults at least two to seven times less than the normal peak current for which the circuit-breakers are set.

Protection of Rolling Stock

No developments of note were reported in connection with protecting a.c. electrical equipment in locomotives and motor coaches against overloads and short circuits. Methods for d.c. stock are considered according to the supply voltage. For 3,000 V. and similar tensions, a high-speed circuit-breaker with one or more overload or maximum-current relays is fitted to most units. The Italian State Railways report a system in which primary protection is given by overload relays which first insert resistance and then open the line contactors. If this fails, the load is taken by a protective circuit consisting of a circuit-breaker and fuse in parallel. The circuit-breaker trips, connecting the traction circuit to earth, while the fuse takes the full line voltage, previously divided between the two branches of the circuit. Clean and instantaneous cutting of the short-circuit current is assured by the fuse.

At 1,500 V. high-speed circuit-breakers are used, but ordinary circuit-breakers or even fuses appear to be sufficient on lower voltages and powers. A tendency to dispense with overload relays is noted on the S.N.C.F., where it is considered that the driving wheels will slip before a dangerous current is reached.

On a.c. rolling stock, only spark-gap and semi-conductor types of lightning arrestors are noted. Condenser type arrestors are most generally used on d.c. systems. The S.N.C.F. has adopted several types of arrestors composed of substances with an electrical resistance which varies inversely with the applied voltage.

Regenerative Braking

Six administrations replying to the reporter use regenerative braking to varying extents. The Belgian National Railways intend to equip 83 locomotives with regenerative equipment for working on the Brussels-Arlon and Brussels-Charleroi lines.

A summary of locomotive equipment for regenerative braking mentions relay control of the connection of the motors to line when the appropriate voltage is reached; and over-voltage relays to prevent a dangerous rise of line tension.

XUM

New 50-Cycle Scheme in North-East France

Extensions authorised at both ends of Valenciennes-Thionville section

THE French National Railways have just undertaken a new stage in their programme of electrification with single-phase a.c. at 25,000 V., 50 cycles. This latest development, part of a major plan covering the principal heavy traffic routes in North-East France, will extend the Valenciennes-Thionville conversion which is now in progress.

The lines to be electrified as the next step rank in importance with the Valenciennes-Thionville section. They comprise: Valenciennes to Lille; Thionville to Reding (via Metz and Remilly); Thionville to Bening; Remilly to Forbach; Conflans-Jarny to Hagondange; and Audun-le-Roman to Valleroy. The total mileage of main line involved is 223·7. Traffic over these lines is dense, amounting to 15 million *tonne*-km. a year, but the proportion of very heavy goods trains is less than between Valenciennes and Thionville.

The adoption of the 50-cycle system of electrification for the important projects in North-East France is a result of studies and, in particular, of satisfactory trial running since October, 1950, with three prototype locomotives and three motor coaches on the experimental line from Aix-les-Bains to La Roche-sur-Foron.

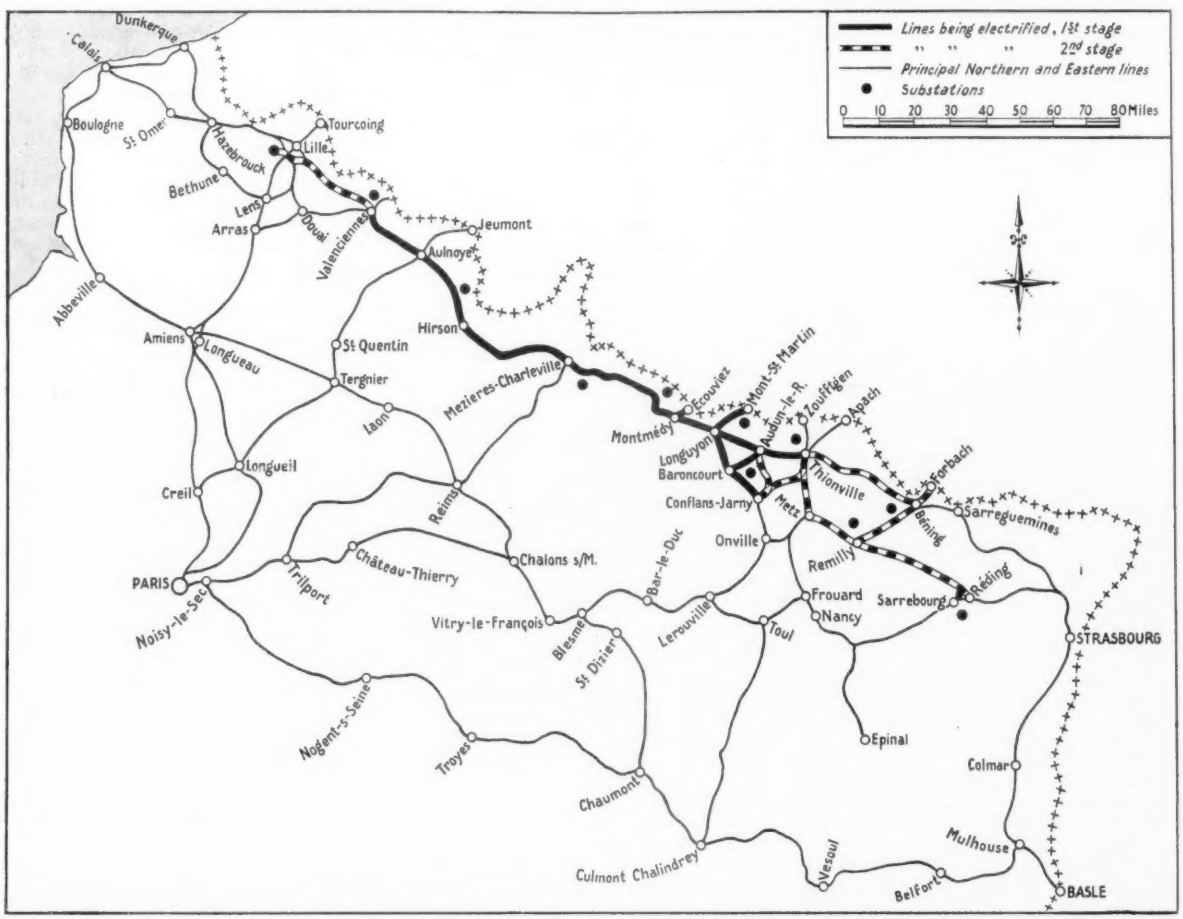
New Motive Power

The conversions at present in progress cover the main line from Valenciennes to Thionville and the sections from Longuyon to Mont - St. - Martin, Longuyon to Conflans-Jarny, and Barancourt to Audun-le-Roman, 225·6 miles in all. At present 105 locomotives are being built for the Valenciennes-Thionville stage of the scheme. They comprise 85 with the Co-Co wheel arrangement, having rotary single-phase/d.c. or single-phase/three-phase converters; and 20 Bo-Bo equipped with ignitron rectifiers or single-phase commutator motors. The duties of these types will be:—

Co-Co Locomotives.—The heaviest goods trains, loads in view being 1,800 *tonnes* up 1 in 100 and 2,400 *tonnes* up 1 in 167.

Bo-Bo Locomotives.—All other trains (express and slow passenger; ordinary and express goods).

The high proportion of locomotives designed specially for heavy goods working is due to the characteristics of the traffic on the line, of which mineral, coal, and coke trains form a major part. Rotary-converter locomotives have been chosen for these duties because of the importance of adhesive weight, which in the Co-Co classes is 120 *tonnes*. The ratio of load hauled in normal service conditions per ton of adhesive weight must, in fact, be higher than the values generally accepted at the present time both in France and abroad. The first of the Valenciennes-Thionville locomotives will be delivered in June this year.



The original Valenciennes-Thionville electrification scheme, French National Railways, and authorised extensions, showing position of substations

Southern Region Change of Frequency Scheme—1

Provision of new substations and cable system in the suburban area to take supply at 50 cycles from the British Electricity Authority

New substation comprising "A" and "B" (foreground) buildings under construction at Wimbledon. Note restricted nature of site between main line and (on left) Sutton line, which is supported by a new retaining wall

ON the suburban lines of what is now the Southern Region of British Railways electric traction using direct current was introduced in stages from 1915 to 1930. The third rail d.c. system at 600 volts, since raised to 660 volts, was standardised for the Southern Railway after the 1923 grouping and divided into three sections for operating purposes; the former L.B.S.C.R. lines electrified at 6,600 volts a.c. were subsequently converted to d.c. working.

The suburban electrification had its outer terminals at Gravesend, Orpington, Bromley North, Hayes, Addiscombe, Caterham, Tattenham Corner, Epsom Downs, Dorking, Chessington South, Guildford (via Effingham Junction), Hampton Court, Shepperton, and Windsor. The d.c. supply was obtained from 49 manually-operated rotary converter substations fed at 11,000 volts, three-phase, 25 cycles. The power on the Western Section was generated at the railway's own power house at Durnsford Road, Wimbledon, which was built by the L.S.W.R. On the Central and Eastern Sections power was received from the Deptford Power Station of the Electric Supply Corporation, originally constructed for the supply to the railway only.

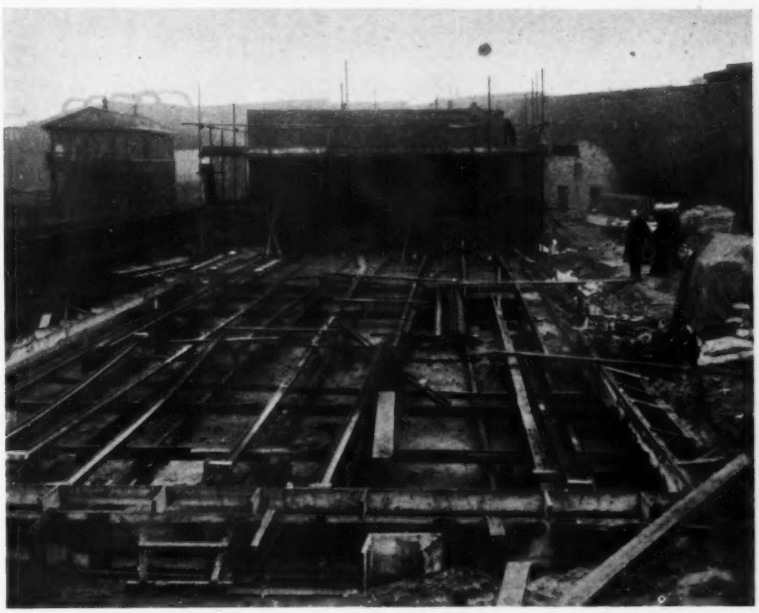
These substations and power stations are now at the end of their economic life, the Deptford Power Station having meanwhile been extended and reconstructed for 50 cycles. In addition, the load has increased because of the number of electric trains added by outer area electrifications which have always been supplied at 50 cycles independently. A further increase in load is due later this year from the substitution of ten-car trains for the present eight-car trains on some routes on the Eastern Section. Provision is also required to meet increased power demands for extension of services.

It was therefore decided to replace the whole of the 25-cycle power distribution system with a new 50-cycle system, using remotely-controlled rectifier substations, at a cost of about £11,500,000, of which £1,750,000 is allocated to civil engineering works. The scheme provides for 71 substations, 70 track-paralleling hut equipments, seven switching stations for 33 kV. circuits and three additional points of connection to the existing 33 kV. 50-cycle-fed substations. All will be operated by supervisory remote control from one of three new control rooms.

The substations are arranged so that the track voltage can be increased from 660 volts to 750 volts at some future date. The completion of the scheme will result in better average track voltage with consequent improved lighting of electric trains, a reduction of line losses and increased protection against track short circuits.

Substation Buildings

Of the 71 substations, 45 are in new standardised buildings. Two are in viaduct arches and 24 are in buildings which were previously occupied by the 25-cycle rotary converters. These are being converted for accommodation of the rectifier equipment. A further



Queens Road, Battersea, substation. "B" building up to roof level in background. Concrete raft reinforced by old rails under construction in foreground for "A" building

three of these buildings are being used as 33-kV. switching stations and will also contain track-paralleling d.c. circuit breakers. Of the original 49 rotary converter substations, four were replaced by 50-cycle rectifier equipment before or during the war, the equipment of one substation being used to provide an extra substation in the inner area and the rest being distributed amongst other substations. Forty-six substations therefore remained in service at the outset of the present scheme so that 19 substation buildings are released for other purposes.

The standard substation buildings are to a common basic design, but slight variations are made to adapt this design to the requirements of the equipment for the three areas. It consists mainly of a rectifier room and a switchgear room, a partition wall separating the two, and with swing door access between them. A battery room and a lavatory are built into the switchgear room, but with external access only. The buildings have 15½-in. cavity outer walls; the external width is 28 ft. 1 in. They are placed longitudinally parallel with the track. The transformer is positioned outside the rectifier room between the building and the track. The d.c. switchgear is placed against the wall of the switchgear room nearer to the track, and the H.V. switchgear is placed close to the back wall opposite the d.c. switchgear. A drawout space common to H.V. and d.c. switchgear separates the two. The basic design is elastic in length to allow the rectifier room to take one or two equipments, and the switchgear room to take the number of H.V. or d.c. switch units required at each site. Where more than two 2,500-kW. rectifier equipments are required at a substation, two separate buildings are provided, arranged left- and right-handed to allow up to four 2,500-kW. rectifier equipments. A special feature in the design of these buildings is the elimination of trenches and the use of a suspended troughing system for small wiring inter-connections.

Two substations are being built in arches. One of these substations will occupy two arches and contain two rectifiers, and the other will occupy seven arches and contain five rectifiers after the removal of existing rotary converters.

The adaptation of existing substation buildings requires a special layout to suit the ground level, space for transformers, position of tracks relative to the building and the amount of switchgear to be installed. The conversion scheme is complicated in certain cases by the necessity of keeping some of the rotary converters in service in the substation until an equivalent plant capacity of new rectifiers can be commissioned in it. It is sometimes necessary, for instance, either to keep the old d.c. switchgear in service until the new is commissioned or provide temporary switchgear in a temporary hut.

Completed track-paralleling hut at Malden between down Kingston and main lines. Note wooden trunking on left for d.c. feeder cables, concrete troughing for supervisory cable in foreground, and telephone hatch in end wall

Track-paralleling huts are to a standard design, except for three buildings to accommodate shelf-mounted circuit breakers released from elsewhere; only the length varies.

The complete scheme is being designed and carried out to the requirements of the Chief Officer (Electrical Engineering), British Transport Commission. The installation of the cable, substation, and supervisory control equipment is being executed under the supervision of the Electrical Engineering (New Works & Development Section), British Transport Commission, in close consultation with the Mechanical & Electrical Engineer, Southern Region, who has also been responsible for the production of the low-voltage feeder and track-switching equipment.

Civil Engineering

The contribution of the Civil Engineering Department to the scheme may be summarised as follows:—

(i) The construction of new control stations, substations, track-paralleling huts and other buildings; the conversion and extension of existing buildings of a similar character.

(ii) In conjunction with the Mechanical & Electrical Engineer of the Region, the provision of routes and installation of low-voltage feeder and negative cables between the substations and track-paralleling huts and the tracks, with alterations to conductor rails, and track bonding.

(iii) The manufacture of concrete troughing for the high voltage and pilot cable routes.

(iv) Liaison between the Electrical Engineering New Works and Development Section of the British Transport Commission and the Regional Operating Department in regard to track possessions, engineers' train workings, etc.

The work differs from prewar extensions of electrification in that it is being carried out on an existing electrified system and in the most congested area of the Southern Region. In contrast to most new works involving heavy expenditure, the civil engineering work consists of a large number of relatively small jobs, the largest not costing more than about £50,000, spread over an area of some 500 sq. miles.

Special attention is being given to the selection of sites for the new buildings with the object of avoiding wherever possible heavy earthworks and the construction of retaining walls, piled foundations and elevated supporting structures. In this, the Civil Engineer is helped by the Electrical Engineers who permit, within limits, some variation from the precise spacing calculated from the electrical requirements of the scheme. Road access to the sites is also of importance as not only does it permit the delivery of construction materials and electrical equipment without involving possession of the running lines, but also, where the railway is in cutting or on embankment, the buildings may be set back from the railway on level ground and so avoid the supporting works mentioned above. It has not always been possible to site the buildings on railway property and small parcels of land are being acquired at 16 sites. Parliamentary powers are sought where necessary.

Except where detailed knowledge of the geological nature of the ground is already available, or obvious, as in a chalk cutting, the Civil Engineer's Research Section has carried out an investigation by bore holes and other means into the nature of the strata and this information is used as the basis of the design of the foundations. At a

number of places it has been necessary to provide reinforced concrete rafts, piled foundations, reinforced concrete sub-structures or heavy retaining walls.

In the inner London area it has been necessary to construct a substation at Blackfriars in two arches of a railway viaduct, and at South Bermondsey an existing substation occupying three arches is being extended by occupying the four adjoining arches.

Standard Design of Building

Apart from these special cases the new buildings are being constructed to standard designs based upon the type and number of units of electrical equipment. The design and layout of the equipment has resulted in a considerable simplification of the structural design of the substations compared with the mercury-arc rectifier substation constructed on prewar main line extensions of electrification. No trenches, ducts or pipes are required in the floors, and the housing of all switchgear inside the building eliminates the external concrete rafts and structures previously provided for supporting the high-voltage switchgear.

As a result of past experience on the Region, it was decided that all buildings should be constructed with cavity brick walls, in substations 15½ in. thick, and in track-paralleling huts 11 in. thick. The interior brickwork is flush pointed, and painted with two coats of cream emulsion paint.

The roofs of substations consist of reinforced concrete beams and slabs cast in situ, waterproofed with ¾ in. asphalte laid in two layers and painted internally with two coats of white emulsion paint. The roofs of track paralleling huts consist of a concrete slab cast in situ and waterproofed with three-ply bituminous felt. The concrete floors of the buildings are finished with granolithic paving 1½ in. thick, subsequently painted with a special concrete paint to improve the appearance and prevent dusting.

Concrete cable entry blocks, roof ventilator units, lintels and cills are manufactured of pre-cast concrete or artificial stone. All doors are of teak. The wall ventilators are manufactured of hardened aluminium and the roof ventilators consist of asbestos louvres secured in teak frames with internal aluminium alloy expanded metal grilles. The buildings generally have been designed to reduce maintenance costs to the minimum.

There are lavatory accommodation and washing facilities at all the substations. Where drainage and piped water supply can be laid in at reasonable cost, a single w.c. suite and a porcelain sink are provided. Where no drainage exists, a chemical closet is installed and where a piped water supply is not available water for washing is obtained from a specially constructed sump, using rain water from the roof.

The whole of the building work is being carried out by contract, competitive tenders being obtained for successive groups of buildings which follow the order of priority required by the electrical engineers. As far as practicable each group comprises buildings of the same type and within the same geographical area. The structural alterations for the conversion of the existing rotary-converter substations are being carried out on a schedule of prices contract. Separate contracts have been let for excavation at six sites; this work is carried out while the drawings are being prepared for the building work so that a level site is available when the main contract is let.

Separate contracts have also been let for the supply of precast concrete cable entry blocks, lintels, cills and other units so that these articles are available for the main contractors directly they require to incorporate them in the buildings. In general all other materials are provided by the main contractors, but special arrangements have been made for certain materials, particularly bricks, to ensure that supplies are readily available immediately the contracts are let.

The low-voltage cable route work and the alterations to conductor rails and track bonding are being carried out by the Civil Engineer employing departmental labour. This work is co-ordinated with the Mechanical & Electrical Engineer who is responsible for supplying the cables and connecting them to the electrical equipment. The cables are laid in surface wooden trunking, but at some sites special supporting structures are required to carry the cables from one line to another on the faces of viaducts or bridges.

Manufacture of Cable Troughing

The concrete troughing for the high-voltage and supervisory cable routes is being manufactured by the Civil Engineer at the Regional Concrete Works at Exmouth Junction, where some 35 men are continuously employed solely on the requirements of this scheme. The total quantity of concrete used in this troughing will amount to some 55,000 tons, incorporating about 2,000 tons of steel reinforcement.

Troughing for cable route being laid on bridges between Cannon Street and London Bridge stations

The installation of the high-voltage and supervisory cable routes is being carried out under the supervision of the Electrical Engineering New Works & Development Section, but where duct lines are laid under or close to tracks and structures, the work is supervised to ensure the safety of the way and works by the inspectors on the Civil Engineer's Headquarters Staff. These inspectors maintain close contact with both the Electrical Engineering New Works and Development Section and the District Engineers' staffs and submit all the applications for possessions and special train workings at the periodical meetings held at District level.

Both the cable route work and the building work make heavy demands on the District Engineers for lookoutmen

Typical cable route in surface reinforced concrete troughing

and hand signalmen, of whom some 40 to 50 are employed at any one time.

To date the following buildings have been completed to a stage where they can be handed over to the Electrical Engineer for the installation of equipment: 45 MVA. transformer rafts, four; substations, 15; conversions of rotary-converter substations, one: extensions of rectifier substations, three; switching stations, two; and track-paralleling huts, 41.

The whole of the civil engineering work in the scheme including both the building work and the low-voltage cable route and conductor rail work, and the manufacture of concrete troughing for the high voltage and pilot cable routes is estimated to cost approximately £1,750,000.

The following is a list of contractors for civil engineering works:—

Erection of Substations and Track Paralleling Huts
Tersons Limited
Demolition & Construction Co. Ltd.
J. W. Ellingham Limited
L. & W. Whitehead Limited
James Longley & Co. Ltd.

Erection of Control Stations
Trollope & Colls Limited
W. H. Gaze & Sons Ltd.

Excavations
J. E. Wallis & Sons
J. B. Edwards & Company
Aubrey Watson Limited

Provision of precast concrete and artificial stone units for Substations and Track Paralleling Huts
Girlings Ferro Concrete Company
Cooper Wettern & Co. Ltd.

Piling to foundations
Piling & Construction Company

(*To be continued*)

Swiss Heavy Electric Hump Shunter

Ninety-ton rod-drive 15-kV. design of 1,370 h.p. on one-hour rating

FOR some time the Swiss Federal Railways have had in traffic in the hump yards at Zurich and Muttenz (Basle) two six-axle electric shunting locomotives of 90 *tonnes* weight, designed to handle 2,000-ton trains when necessary. In general design these locomotives are simply two of the well-known and old-established three-axle locomotives of the 16300 series used all over the country by the S.F.R., the only difference apart from necessary changes to the cab and controls being a minor change in gear ratio to 1:6·2 from the old 1:5·58.

Classified as Ee 6/6, these two locomotives, Nos. 16801 and 16802, have the C-C wheel arrangement. They were built by the Swiss Locomotive & Machine Works (S.L.M.), and have Brown Boveri motors and Sécheron contactor and control gear. Above the two frame structures, now in the form of bogies, are the underframe with central cab and two casings resting on two spherical pivots and four spring-loaded side bearers.

The motor of each bogie and its force-ventilating blower projects up into the adjacent end casing; and these end casings also house the transformer, control gear, compressors, and batteries, the compressor itself being of S.L.M. make and of a capacity great enough to supply the air needed for the Westinghouse straight and automatic brakes.

The wheels are 41 in. dia. and the centre wheel-and-axle assembly in each bogie has ± 8 mm. side play; special provision is made for relative vertical movement of the two bogies to suit the sudden change in gradient at the hump top, and at the bottom on the yard side. The bogie wheelbase is 13 ft. 3 in. and total locomotive wheelbase 35 ft. 8 in.

Each motor has two one-hour outputs, namely, 400 kW. at 920 r.p.m. and 560 kW. at 870 r.p.m.; the one-hour wheel-rim tractive effort is 31,000 lb., continuous effort 25,500 lb., and starting effort 55,000 lb. The control gives a special track speed regulation to suit hump work at zero to 5 km.p.h. (0 to 3·1 m.p.h.), but in the higher speed range, up to the maximum of 28 m.p.h., the two motors are coupled together in parallel.

Swiss Locomotive & Machine Works shunter for Swiss Federal Railways

Power and Automatic Signalling at Cologne

Desk panel interlocking apparatus and multiple-aspect signalling, with novel train describing apparatus, have restored normal working in this area

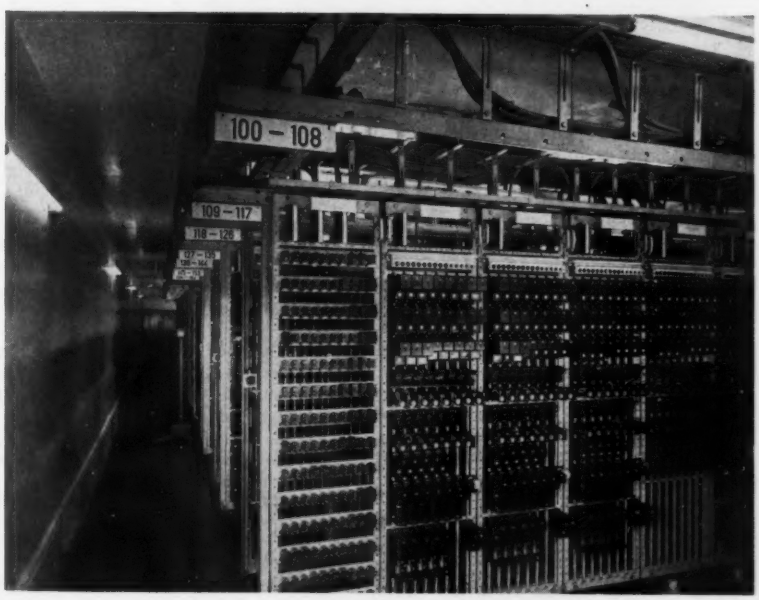
Interior of Central Station box, with supervisor and assistants facing illuminated diagram, and signalman at desk panel

THE heavy damage suffered in the war by the railways in and near Cologne resulted in the almost complete destruction of the signalling and although temporary equipment was put in service in 1945 this had to be replaced as early as possible, entailing the application of power interlocking and multiple-aspect signalling on a large scale, controlled from signal boxes of the so-called "Dr," or desk panel type, of Siemens & Halske pattern, as described on page 182 of our issue of August 15, 1952. This incorporated route setting for both running and shunting movements, and, for the first time, a train describer system in which the number of the train in the working time table is given on the illuminated diagram, section by section as it proceeds through the area.

Area Covered

The area comprised by the new scheme includes the two station of Cologne Central (Hauptbahnhof) and Deutz (Köln-Deutz), on the east bank of the Rhine, with two large yards, one immediately to the west and the other at Deutzerfeld. Multiple-aspect signalling was installed in an area bounded by the Nippes, Herkulesstrasse, South Mülheim and Kalk signalboxes. There were 13 boxes before the re-signalling; 11 of these have been replaced by five new ones, a saving of six. The area may be considered to be one operating unit, as the supervisor in the new "Kf" box at the Central Station regulates all movements within it, aided by the train describer equipment referred to. Deutz station is included in the area indicated on the diagram at the Central Station, from which it is separated by the Hohenzollern Bridge, over which there are now two tracks in place of four before the war. With the new signalling, however, ample capacity is provided and the Christmas traffic of 1951, with 638 trains daily, was smoothly handled.

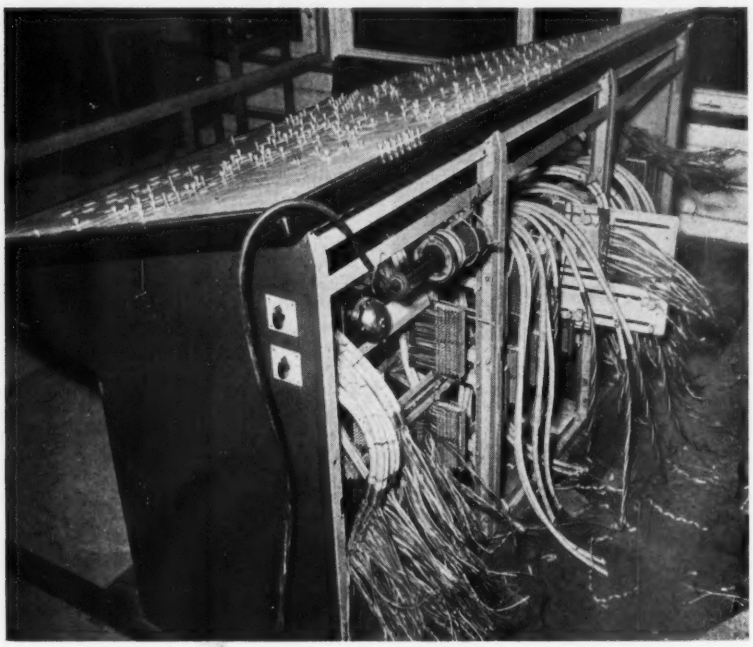
The Central Station box, "Kf," deals with a daily average of 1,100 running and 165 shunting movements. The supervisor has a desk panel from which he gives orders to the signalman at the principal one, but during quiet hours this working can be cut out and everything be controlled by the signalman alone. The condition of the signals and track sections is indicated on a large diagram in front of the supervisor. An occupied condition is shown by the appearance of the train number in the track section concerned and thus the supervisor is kept continuously informed of the situation and the exact position of each particular train. These numbers are produced by optical projector equipment behind the panel, under the control of a magazine relay system. This arrangement was later applied to the centralised traffic control installation between Nuremburg and Regensburg, and elsewhere. When a train is approaching the area its description is sent forward into the describer storage mechanism by dialling, and when the first signalling section becomes occupied by that train its number will appear in the appropriate section on the panel, which then moves forward section by section, as explained. Where routes diverge the setting of the points determines the way in which the descriptions are sent forward. At the "Kf" signalbox a description can be cancelled for terminating trains, and for those



Interior of relay room at Central signalbox

proceeding forward a new number description can be, if necessary, initiated by re-dialling.

As it is necessary to have early knowledge of trains coming from Cologne South—beyond the West station—the descriptions are given on additional indicators on the panel, together with the probable passing time, and this is done also from the Nippes direction. The projection apparatus consists of six units of 10 figures or letters, each thus comprising 60 lamps, of which six are in operation at a time for the one train description at any given location on the diagram. It is intended to use the relay combinations controlling these descriptions to actuate a printing mechanism and record the train movements automatically, dispensing with hand entries in a register book.



Desk type panel with route-setting buttons being installed, Central Signalbox

The limited number of platforms makes it necessary to use them for more than one train, and light signals, suspended from the station roof, are provided to divide each into six sections, although three trains only of moderate length can be accommodated in a platform line. When a train is signalled into the station special indicators on the home signal notify the driver to which point in the platform he has to proceed. As a train leaves a platform these special dividing signals clear behind it automatically, allowing a following one to come forward, but any one of them can be held at danger, manually, if desired.

Interlocked signalled routes are used for shunting movements controlled by the Central Station box, but not elsewhere. These routes, as those for running movements, are set up by actuating two buttons on the signalman's panel, marking the beginning and end of the movement.

The "Bf" box at the West Carriage Sidings deals with 420 running movements daily to and from the Central Station, the connecting lines being fitted with multiple-aspect automatic signals. As traffic is at times very congested these are arranged to allow of "stop and proceed" permissive working. Total movements dealt with daily including shunts, are about 1,920. This signalbox also includes a supervisors' panel for giving orders to the actual signalman. The old "RI" box, which is now out of service, is being used as a describing post, by telephone and magnetophone, for movements in and out of the sidings.

At the Deutz station, signalbox "Df," there are 630 trains daily, of which 55 are non-stop. Here the supervisor operates the desk panel himself. There is the usual diagram board on which the train descriptions appear. As there is little to do for most train movements, there being not much shunting as a rule, it is in contemplation to work this signalbox from that in the Central Station by remote control. The western end of the Deutzerfeld yard is controlled by a box known as "Dtf," which serves as a junction point for movements to and from the station itself, but the yard shunting movements are dealt with by another signalbox situated at the east end of the sidings. The supervisor works the desk himself.

Multiple-Aspect Signals

The lines on the bridge are signalled for reversible working. The signals throughout the area, except a few at the approaches, are colour-lights with the following aspects:—

1. Stop	Red
2. Caution	Yellow over yellow
3. Proceed	Green over green
4. Proceed at reduced speed (junction)	Yellow over yellow, with flashing yellow to the *left* below
5. Approach indication to Aspect 4	Green over green with steady yellow to the *left* below
6. Caution, at *short* braking distance	Yellow over yellow, with steady white to the *right* below

The subsidiary draw-ahead aspect is a yellow letter "V" (*vorrücken*) below the ordinary aspect. All signals have an auxiliary red unit in case the main one fails. Previously in Germany, it is understood, the multiple aspect principle had only been used on any scale on city suburban lines, in Berlin and Hamburg. On the automatic signals the "V" indication is permanently lighted.

Special Station Working

The reversible working on the bridge is of special value when there is a rush of traffic in one direction and a quiet interval in the other, but it is not the bridge section which forms the actual bottleneck. That is a result of the limited capacity of the station itself. It is important, therefore, to do everything to expedite the handling and especially the starting of trains. Special arrangements have been made to shorten the latter process which involves:—

(1) Notification to signalbox by platform inspector that train is ready to start;
(2) clearing of starting signal;
(3) giving the driver the signal to start;
(4) setting the train in motion.

In Germany it is the official on the platform and not the guard who gives the signal to start. The curved eastern ends of the platform made it difficult to see sufficiently well and to reduce the time involved in (3) special train starting indicators, audible and visual, have been provided by the starting signals, operated from several convenient points on the platform.

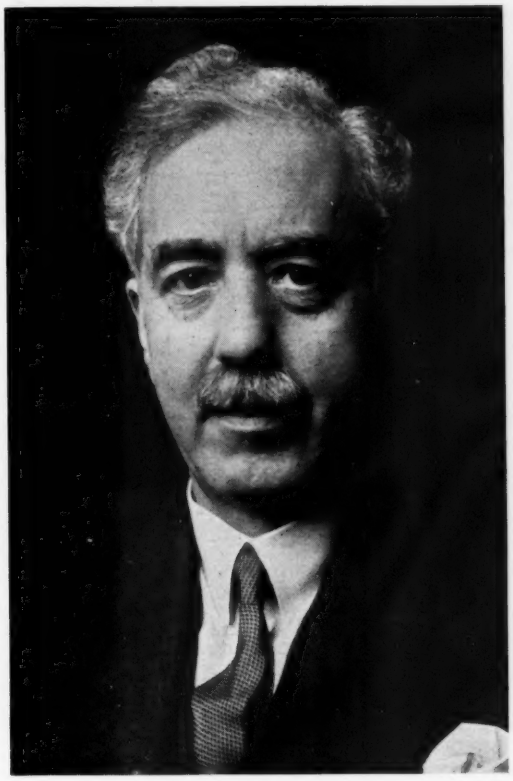
Some of the signalboxes were new, but in other cases the equipment was installed in altered structures, or some place rendered vacant. The relay equipment at the Central Station was housed in arches under the line. Work was begun on December 1, 1950, and the installation brought into service gradually, beginning with the box at the east end of Deutzerfeld yard on May 29, 1951, and that at the west end in the July. The automatic signalling sections were then opened and finally, after careful preparation, the "Df" signalbox was put into service, within a space of 48 minutes, on December 2, 1951, a staff of 300 being engaged on the changeover. The box at the Western yard was opened three months later. Although the change to a completely new form of power signalling was not easy to effect it was accomplished with very little incident, and few train delays, as a result of very complete preliminary instructional courses covering technical and operating grades.

RAILWAY NEWS SECTION

PERSONAL

Mr. A. P. Sarkar, previously Deputy Financial Adviser & Chief Accounts Officer, Eastern Railway, India, has been appointed Financial Adviser & Chief Accounts Officer of the Ganga Bridge Project.

Sir Gilmour Jenkins, K.C.B., K.B.E., M.C., Permanent Secretary of the Ministry of Transport & Civil Aviation, who, as recorded in our March 5 issue, has been elected President of the Institute of Transport for the session commencing October 1, 1954, was born on July 18, 1894, and was educated at Rutlish School and London University. He served during the 1914-18 war with the Royal Garrison Artillery, and was awarded the M.C. and bar. He entered the service of the Board of Trade in 1919, and became an Assistant Secretary in 1934. In 1935 and 1936 he was Government Delegate to the Maritime Sessions of the International Lanour Conference at Geneva, and, in 1945, at Copenhagen. Sir Gilmour Jenkins was appointed a Principal Assistant Secretary, Board of Trade, in 1937, and became Second Secretary, Ministry of Shipping, in 1939. He was made a K.B.E. in 1944, was a Deputy Director-General of the Ministry of War Transport from 1941 to 1946, in which year he was appointed Joint Permanent Under Secretary of State at the Foreign Office in charge of the German Section, the position he held until his appointment in 1947 as Permanent Secretary of the Ministry of Transport. Sir Gilmour Jenkins was awarded the K.C.B. in 1948, and, in the same year, he became a Member of the Institute of Transport. In 1951, he was elected an Additional Ordinary Member of the Council of the Institute, and held the office of Vice-President in 1953-54. In 1953, on the retirement from public service of Sir Arnold Overton, Permanent Secretary of the Ministry of Civil Aviation, Sir Gilmour Jenkins became the Permanent Secretary of the combined Ministry of Transport & Civil Aviation.



Sir Gilmour Jenkins
President of the Institute of Transport, 1954-55

Mr. H. Arkle
Appointed European General Manager, Canadian Pacific Railway

The following changes have been announced by Canadian National Railways:

Mr. Maynard A. Metcalf, C.B.E., Executive Assistant to the President and Vice-President, has been appointed Vice-President of Traffic, succeeding Mr. John Pullen, who has retired. Mr. Douglas I. Grant, Secretary of the company, who has been closely associated with the management of the railway, succeeds Mr. Metcalf as Executive Assistant. Mr. Robert H. Tarr, Assistant Secretary, becomes Secretary.

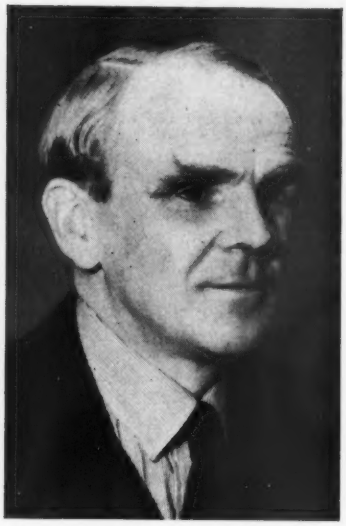
Mr. James A. Argo, Assistant Vice-President of Traffic for Canadian Lines, has been appointed Deputy Vice-President of Traffic for the system.

Mr. Garret Fitzgerald, A.M.Inst.T., Commercial Development Superintendent of Aer Lingus, has been co-opted Honorary Secretary of the Irish section of the Institute of Transport in Dublin.

Mr. Harry Arkle, General Freight Traffic Manager of the Canadian Pacific Railway, who, as recorded in our March 12 issue, has been appointed European General Manager for the company with effect from April 1, was born in Gateshead-on-Tyne. He joined the C.P.R. in Winnipeg as a junior clerk in 1912. During the 1914-18 war he served in France with the Canadian Expeditionary Force, returning to the company's freight office in Winnipeg in 1919. Most of his career has been spent in Winnipeg where he won steady promotion. He became Freight Traffic Manager for the Prairie and Pacific regions in 1943, still in Winnipeg. Last summer he moved to the company's headquarters in Montreal as Freight Traffic Manager with jurisdiction over all the company's lines in Canada and the United States. Mr. Arkle, in his new position as European General Manager, succeeds the late Mr. J. C. Patteson, whose death was recorded in our January 15 issue.

The Minister of Transport & Civil Aviation, the Rt. Hon. Alan Lennox-Boyd, M.P., has appointed Mr. R. P. Turner and Mr. S. O. Thomas, J.P., C.C., who are representatives of agriculture, to be members of the Transport Users Consultative Committee for Wales & Monmouthshire.

Mr. C. W. Barclay
[Appointed Assistant Regional Staff Officer, Scottish Region



Mr. F. Fawcett
Appointed District Engineer, St. Pancras, L.M. Region, British Railways

Mr. R. J. Haxby
Appointed District Estate Surveyor, Peterborough, Eastern Region

Mr. C. W. Barclay, Assistant to Regional Staff Officer, Scottish Region, British Railways, who, as recorded in our February 26 issue, has been appointed Assistant Regional Staff Officer of that Region, joined the service of the Caledonian Railway in 1912 in the office of the District Superintendent, Glasgow Central. He served with the Scottish Horse and the Machine Gun Corps from 1915 to 1919, and, on being demobilised, he returned to staff work in the Glasgow District office. As a result of the 1923 grouping, the Glasgow District office was closed in 1925, and Mr. Barclay was transferred to the office of the General Superintendent, where he was employed in various sections of the Staff Department and in the Engine Co-Ordination & Research Section. He occupied the position of Clerk-in-Charge of the Motive Power Staff section and subsequently became Chief Staff Clerk in the office of the Operating Manager, Glasgow. When the Scottish Regional Staff Office in Glasgow was set up on January 1, 1948, Mr. Barclay was appointed Wages Assistant to the Regional Staff Officer, which position he retained until his appointment at Railway Executive headquarters as Staff Officer (Operating Staff) in May, 1950. In November of the same year he returned to Glasgow as Assistant to the Regional Staff Officer, Scottish Region.

Mr. F. Fawcett, A.M.I.C.E., District Engineer, Derby (South), London Midland Region, British Railways, who, as recorded in our February 5 issue, has been appointed District Engineer, St. Pancras, began his railway career on the former L.M.S. as a junior draughtsman in the District Engineer's office at Blackburn in 1925. After gaining experience, Mr. Fawcett became Hallade Assistant in the Divisional Engineer's office at Manchester in 1932, and was appointed a draughtsman in the same office a year later. In 1935 he was transferred to the Structure Section of the Chief Engineer's office at St. Pancras, where he remained until 1939, when he was made responsible for supervising the construction of the Railway Executive Committee's wartime headquarters in a disused London tube station. In 1940 Mr. Fawcett was appointed Resident Engineer at Wolverton, where he was engaged on the erection of the shell forging plant in the carriage and wagon works, and, in 1943, he was appointed Engineering Assistant to the District Engineer, Northampton. Two years later Mr. Fawcett became Assistant District Engineer, Barrow-in-Furness, and, in 1946, Assistant District Engineer, Walsall. He was appointed District Engineer, Derby (South), in 1951.

Mr. R. B. Winship
Mechanical Engineer (Car), C.P.R., 1941-54

Mr. W. F. Sinclair
Appointed Engineer of Motive Power, Canadian Pacific Railway

Mr. A. E. McGruer
Appointed Engineer of Electrical Equipment, Canadian Pacific Railway

Mr. R. J. Haxby, A.R.I.C.S., Assistant Surveyor, Estate & Rating Surveyor's Department, Eastern Region, Marylebone, British Railways, who, as recorded in our March 5 issue, has been appointed District Estate Surveyor, Peterborough, with effect from March 1, 1954, entered the service of the Southern Railway Company in 1939 as a clerk in the Estate & Rating Surveyor's Department, Victoria. He joined H.M. Forces in July, 1939, and served with the Royal Artillery until 1946, being demobilised with the rank of Captain. He resumed duty with the Southern Railway Company as a Technical Assistant and, in 1950, was transferred to the headquarters of the Estate & Rating Surveyor's Department, London Midland Region, at Euston. He joined the staff of the Estate & Rating Surveyor, Eastern Region, Marylebone, in 1951.

Mr. R. B. Winship, Mechanical Engineer (Car), Canadian Pacific Railway, who, as recorded in our February 5 issue, has retired, began his career with the C.P.R. at Montreal in 1920 as Chief Draughtsman in the Chief Mechanical Engineer's Department. He has been in the Windsor Station headquarters of the mechanical department ever since, becoming Assistant Mechanical Engineer in 1937 and Mechanical Engineer (Car) in 1941.

Mr. W. F. Sinclair, who, as recorded in our February 5 issue, has been appointed to the new position of Engineer of Motive Power, Canadian Pacific Railway, joined the C.P.R. in 1916 at Winnipeg as a Machinist Apprentice, becoming Shop Engineer there in 1936. During the 1939-45 war he came to Montreal to take part in the C.P.R.'s munitions programme. His wartime duties took him overseas twice. He was appointed General Supervisor of Diesel Equipment in 1948, when the railway embarked on its dieselisation programme, under which its fleet of diesel locomotives has expanded to well over 300 units.

Mr. A. E. McGruer, General Electrical Engineer, Canadian Pacific Railway, who, as recorded in our February 5 issue, has been appointed Engineer of Electrical Equipment, went to Montreal in 1953 as General Electrical Engineer from the post of Electrical Engineer for the Eastern Region of the railway at Toronto. He had held that position since 1946 after serving at Toronto since 1928 as Foreman Electrician & Supervisor of Stationary Boiler Plants. He had worked at Preston, Ontario, since 1920 as an Electrician with the Canadian Pacific's electric lines in south western Ontario after first joining the railway in Montreal.

Mr. R. W. Coatesworth, A.R.I.C.S., has been appointed District Estate Surveyor, York (York-Middlesbrough District), North Eastern Region, British Railways.

Mr. S. D. Ward, Assistant to District Operating Superintendent, Stratford, Eastern Region, British Railways, has been appointed Assistant District Operating Superintendent (Southend District), Fenchurch Street, with effect from February 1, 1954.

The following appointments have been announced by the Scottish Region of British Railways :—

Mr. E. J. M. Matheson, Assistant District Engineer, Sheffield, Eastern Region, to be District Engineer, Glasgow (North).

Mr. B. J. Henstock, New Works Assistant, S. & T. Engineer's Office, Glasgow, to be Assistant Signal Engineer, Signal & Telecommunications Engineer's Department, Glasgow.

Mr. W. Clark, Chief Foreman, M. & E.E. Department, Cowlairs, to be Assistant Works Manager, Mechanical & Electrical Engineer's Department, St. Rollox, Glasgow.

Mr. G. H. D. Mackie, Assistant to Works Manager, C. & W.E. Department, Cowlairs, to be Assistant Works Manager, Carriage & Wagon Engineer's Department, Cowlairs, Glasgow.

Mr. J. G. Campbell, Inspection & Initial Examination Assistant, C. & W.E. Department, St. Rollox, to be Assistant Works Manager, Carriage & Wagon Engineer's Department, St. Rollox, Glasgow.

The following "Acting" appointments in the London Midland Region of British Railways have been confirmed:—

Mr. H. L. Robson, Assistant Estate & Rating Surveyor, Euston.

Mr. W. F. Beatty, District Engineer, Crewe.

The following appointments have been made :—

Mr. F. J. Burge, Assistant to District Operating Superintendent, Nottingham, to be Assistant Operating Superintendent, Birmingham (M).

Mr. F. Bateman, Assistant District Operating Superintendent, Barrow, to be Assistant District Operating Superintendent, Derby.

Mr. S. F. Hunt, Goods Agent, Penrith, to be Goods Agent, Rugby.

Mr. Ahmad Abdur Rahman, District Mechanical Engineer, East Bengal Railway, Pakistan, who is responsible for the operation and maintenance of all railway engines and rolling stock in the Lalmanirhat District, has come to the United Kingdom for training under the Colombo Plan Technical Co-operation Scheme. He will spend three months at Derby studying the construction, maintenance and operation of diesel electric locomotives and three months at Crewe studying modern practice in heavy repairs to steam locomotives and production methods for the manufacture of spare parts. This will be followed by visits to firms manufacturing steam locomotive equipment.

Mr. J. G. T. Anderson, F.C.I.S., A.M.Inst.T., has been appointed Secretary to the Ulster Transport Authority in succession to Mr. T. B. Andison, F.C.I.S., M.Inst.T., whose retirement was recorded in our March 12 issue.

Dr. Hans Seebohm, Minister of Transport for Germany, arrived in London on March 14 with a team of experts. They are over here to make a study of Britain's railways, roads and aircraft factories.

Mr. F. Grundy, a nominee of the British Transport Commission, has been appointed a member of the Transport Users Consultative Committee for the Yorkshire Area, in place of Mr. E. W. Arkle who has resigned. Mr. Grundy is Commercial Superintendent, North Eastern Region, York, British Railways.

Mr. James Hadfield, M.B.E., Technical Manager, Beyer, Peacock & Company, Ltd., has been appointed to the board of Directors.

Mr. Duncan W. Fraser, Chairman, Montreal Locomotive Works, Limited, is retiring as from April 30.

Mr. E. Y. Caswell, manager, Bristol District, Skefko Ball Bearing Co. Ltd., will join the Executive Staff at the company's head office as Sales Manager.

Lord Baillieu, Chairman of Dunlop Rubber Co. Ltd., has returned to England after an extended business tour during which he visited Australia, New Zealand, Ceylon and Malaya.

Tube Investments Limited announces that, for personal reasons, Mr. N. G. Lancaster has relinquished his appointments as a director of the company, and of its subsidiary and associated companies, as from March 13.

Mr. Martin Ettington has been appointed General Manager of Engineering, American Locomotive Company. Mr. Ettington will be in charge of all product engineering activities at each of Alco's six plants. He will establish headquarters at Schenectady.

Mr. P. M. Hollingsworth, M.Eng., M.I.E.E., Mem.A.I.E.E., has been appointed Chief Engineer of the Power Cables division of British Insulated Callender's Cables Limited, to succeed Mr. W. P. Fuller on his eventual retirement. Mr. Hollingsworth will be responsible for the design and quality of power cables of all types and for applied research on cables and materials. He will operate from 21, Bloomsbury Street, London.

The Steel, Peech & Tozer branch of the United Steel Companies, Limited, announces that Mr. P. Beynon will be appointed Manager of the newly-formed Work Study Department.

Although some months may elapse before this new service begins to operate, Mr. Beynon relinquished his position as Spring Shop Manager on March 1 to devote his full time to forming the new department.

Mr. E. Houghton, Assistant Spring Shop Manager, has succeeded Mr. Beynon as Spring Shop Manager.

The following changes in the company's Middle East, East and Far East executive staffs are announced by Thos. Cook & Son (Continental & Overseas) Limited.

Although all the moves involved have not yet been finalised, the following appointments have been made :—

Mr. J. Watson now has the dual role of General Manager for the Middle East & Branch Manager, Cairo.

Mr. G. H. Brown, General Manager for the East, will relinquish that appointment on health grounds. He will be succeeded by Mr. B. C. Hale, General Manager for the Far East.

Hong Kong office, managed by Mr. J. Mouat, will now form part of the Eastern territory, controlled from Bombay.

The following changes have been announced by Metropolitan-Vickers Electrical Co. Ltd. :—

Dr. C. Dannatt, Assistant Managing Director since August, 1951, has been appointed Deputy Managing Director.

Mr. J. F. Perry, Managing Director of Metropolitan-Vickers Electrical Export Co. Ltd., has been appointed a Director of the parent company.

Mr. Arthur C. Main, Director & Works Manager, Trafford Park Works, has been appointed Director of Manufacture. Mr. E. W. Steele, Director & General Manager of Works, is retiring from executive duties, but remains a Director of the company.

XUM

French Summer Passenger Services, 1954

New services, considerably the fastest on record, between Paris and Amsterdam and Berne: many substantial accelerations

Some notable train service developments will figure in the 1954-55 passenger services of the French National Railways, due to come into operation on May 23 next. As the result of the recent experimental run of one of the new German three-car diesel-electric train sets between Cologne and Paris, this train is to go into regular service betwen Dortmund and Paris, making the return journey in the day. It will leave Dortmund at 5.35 a.m., Cologne at 7.16 a.m., and Liége Guillemins at 8.57 a.m., reaching Paris at 12.45 p.m.; the return journey will begin at 5.40 p.m. and Liége will be reached at 9.18 p.m., Cologne at 11 p.m., and Dortmund at 12.44 a.m. The train will carry second class passengers only, at supplementary fares, and will be provided with restaurant car accommodation. The time of 5 hr. 20 min. between Paris and Cologne compares with a fastest time of 6 hr. 24 min. in 1939.

Paris to Cologne and Amsterdam

The allowance of 3 hr. 48 min. for the 226·7 miles between Paris and Liége is less than the 3 hr. 59 min. non-stop schedule of 1939, even though the new train will make the intermediate stops at St. Quentin, Aulnoye, Mauberge, Charleroi, and Namur of the French "Sambre-et-Meuse" unit which it replaces between Paris and Liége. This makes necessary some extremely fast timings on French territory, in particular 78 min. for the 95·1 miles from Paris to St. Quentin (73·2 m.p.h.), and 82 min. in the reverse direction; and 32 min. for the 38·8 miles from St. Quentin to Aulnoye (72·8 m.p.h.), and 33 min. southbound. A special connection to this train will run between Cologne and Bonn, leaving Bonn at 6.35 a.m., and getting back to Bonn at 11.36 p.m.

The institution of this service is subject to French Government approval, and if this is received, the two French "Sambre-et-Meuse" diesel units, first and second class, are to be transferred to the Paris-Brussels-Antwerp-Amsterdam service, as a new *rapide* called "Le Diamant." One train will leave Paris at 5.45 p.m., non-stop to Brussels Central in 2 hr. 59 min., reaching Antwerp at 9.26 p.m. and Amsterdam at 11.45 p.m.; the other will start from Amsterdam at 1 p.m., Antwerp at 3.19 p.m., and Brussels at 4.1 p.m., reaching Paris at 7 p.m. The times of 2 hr. 59 min. for the 192·3 miles between Paris and Brussels and 6 hr. between Paris and Amsterdam, will be the fastest ever yet scheduled; the best prewar time was 6 hr. 51 min. with the "Etoile du Nord" and "Oiseau Bleu" northbound, and the "Oiseau Bleu" southbound, there will be five non-stop runs daily between Paris and Brussels.

Paris-Berne in 6½ Hr.

Two further developments of considerable interest, both foreseen for some time past, concern the service between Paris and Berne, and one of these will provide by far the fastest journey on record between these two cities. In connection with the 7.45 a.m. *rapide* from Paris to Basle, a diesel railcar will run from Belfort to Berne via Delle, reaching the Swiss capital at 2.17 p.m.; it will return at 5.15 p.m., connecting at Belfort with the 6.25 p.m. *rapide* from Basle, so that passengers will reach Paris at 11.55 p.m. The times of 6 hr. 32 min. eastbound and 6 hr. 40 min. westbound are the fastest by a considerable margin that have ever operated between Paris and Berne; the fastest prewar time was 8 hr. 4 min.

The second development, in pursuance of the S.N.C.F. policy of making the maximum possible use of its electrified main line between Paris and Dijon, is the diversion of the through sleeping car service from Paris to Berne and Interlaken from the Belfort-Delle route to that via Dijon and Pontarlier. Through coaches between Paris and Berne already are provided on the 11.5 p.m. from Paris (Lyon) via Pontarlier, to which the sleeping car will be added; in the reverse direction it will be attached to the existing 9.13 p.m. from Berne, which will start at 9.54 p.m., and reach Paris at 6.35 a.m., an acceleration of 26 min.

New Paris-Vienna Service

The 7.45 a.m. from Paris Est to Basle, formerly a diesel-electric unit and now expanded to a steam-hauled train, is to include through coaches for Chur and Vienna; these will wait at Basle from 1.15 to 2.15 p.m., and reach Zurich at 4 p.m., the Chur section reaching its destination at 5.57 p.m., with a connection to St. Moritz, and the Vienna section reaching Innsbrück at 10.5 p.m., and Vienna at 8 a.m. the following morning. In the reverse direction departure will be from Vienna at 12.20 a.m., from Innsbrück at 10.3 a.m., from Chur at 2.16 p.m., and from Zurich at 4.21 p.m., reaching Basle at 5.41 p.m., for attachment to the 6.25 p.m. Paris *rapide*, which is due in Paris Est at 11.55 p.m.

A new service is to operate with a diesel-electric railcar from Bar-le-Duc at 10.35 a.m., connecting with the 8 a.m. from Paris, to Metz, Sarrebrück, and Frankfort, arriving at 3.26 p.m.; it will return at 3.46 p.m., reaching Metz at 7.36 p.m., to connect with the 7.42 p.m. to Paris, which will be reached at 11.35 p.m. A new train will leave Strasbourg at 1.18 p.m., also in connection with the 8 a.m. from Paris Est, for Stuttgart, Munich (7.10 p.m.) and Salzburg (9 p.m.); the return service will be from Salzburg at 10.45 a.m., and Munich at 12.30 p.m., reaching Strasbourg at 6.3 p.m., whence the 6.20 p.m. *rapide* will give a Paris arrival at 11.35 p.m. By a connecting train from Vienna at 6.15 a.m., this service will give the unprecedented opportunity of a journey from Vienna to Paris without any overnight travelling.

Geneva to the Riviera

To improve the summer communications between Switzerland and the South of France, a railcar will leave Geneva Cornavin at 9.40 a.m., with connection from Berne, for Grenoble, arriving at 12.19 p.m. Here 59 min. will be allowed for lunch, and the car will proceed to Digne, connecting there with a railcar of the Chemins de Fer de Provence for an arrival in Nice at 8.30 p.m. The return service will leave Nice at 8.20 a.m. and reach Digne at 11.50 a.m.; after 60 min. for lunch the S.N.C.F. car will leave at 12.50 p.m., and Grenoble at 4.50 p.m., reaching Geneva at 7.28 p.m., and connecting there with an express for Berne. A through coach will run from Geneva to Valence attached to the S.N.C.F. railcar, reaching Valence at 2.58 p.m., and giving a connection to the South Eastern Region main line as far as Marseilles; in the reverse direction the coach will leave Valence at 2.55 p.m., joining the railcar at Grenoble.

The "Simplon-Orient Express," hitherto first and second class only, will include third class coaches between Paris and Milan. The westbound "Orient Express" will leave Vienna 50 min. later, at 12.5 noon, and be due in Paris 45 min. later, at 9 a.m. From June 12 to September 18 the southbound Copenhagen section of the "Nord Express" will run separately throughout, leaving Copenhagen at 11.20 a.m. as last summer, but reaching Paris all but 2 hr. earlier, at 1.37 p.m. the following day.

In the south of France a new through service is to run between Marseilles (12.50 p.m.), Perpignan, and Port Bou (7.20 p.m.), whence a Spanish connecting train will leave at 8 p.m. for Barcelona, arriving at 11.15 p.m. The northbound working will be at 8.30 a.m. from Barcelona, arriving Cerbère at 12 noon, whence the S.N.C.F. connecting train will start at 1.15 p.m., and reach Marseilles at 8.10 p.m. These trains will connect at Arles with trains to and from Lyons and the north.

Cambridge District Stationmasters' Annual Luncheon

The eighteenth annual luncheon of stationmasters of the Cambridge District, Eastern Region, was held in the Lion Hotel, Cambridge, on March 13.

Mr. J. W. Dedman, District Operating Superintendent, Cambridge, who presided, proposed the toast of "The Eastern Region," and welcomed the guests; he regretted the unavoidable absence of Mr. C. K. Bird, Chief Regional Manager, and of Mr. E. W. Rostern, Regional Operating Superintendent, but read a message of goodwill from Sir John Elliot, who in previous years had been the guest of honour at these luncheons as Chairman of the Railway Executive. Criticism of the nationalised railways was rife, Mr. Dedman stated, but there must be pride in their own and other Regions of British Railways and the will to give the best possible service at the lowest cost.

Mr. W. E. Blakey, Assistant Commercial Superintendent, Eastern Region, replying, said that whatever organisational changes might be brought about by the Transport Act of 1953, stationmasters would have scope to help the railways to provide better service. The receipts of the Eastern Region in 1953 were satisfactory except for the higher classes of goods. The new Act had increased the competition for freight, and the competitive position of the railways had been worsened by the rise in railway rates on March 1, which made good service more than ever necessary. Mr. Blakey went on to refer to the great interest he himself had experienced in railway commercial and operating work.

Mr. A. R. Dunbar, Divisional Operating Superintendent (Eastern), in reply to the toast of "The Visitors," said that economies in working the railways were essential. In a hard, competitive world they might have to do hard things.

Others present from the Eastern Region included:

Messrs. G. F. Fiennes, Assistant Divisional Operating Superintendent (Eastern); J. L. Salmon, Editor, *British Railways Magazine* (Eastern Region);

Cambridge District: Messrs. A. J. Johnson,

Commercial Superintendent; G. C. Parslew, Motive Power Superintendent; E. D. Robinson, Engineer; C. V. Barrett, Assistant Operating Superintendent; R. E. Evans, Assistant Engineer; E. Hopkins, Assistant Commercial Superintendent; R. A. Taylor, Stationmaster, Cambridge (Secretary); and retired District Officers: A. H. Rees (Motive Power); G. Sutcliffe (Operating); M. D. Thompson (Commercial); and A. H. Wright (Assistant Commercial);

Messrs. R. E. Lawler, District Commercial, and W. F. Heather, Assistant District Commercial Superintendent, Ipswich; E. O. Lloyd, District Goods Superintendent, Gordon Hill; and D. S. Davis, Assistant District Commercial Superintendent, Peterborough.

British Railways Locomotive and Rolling Stock Construction

Details are given below of British Railways locomotive, carriage, and wagon-building programme for the current year, in amplification of the information in our issue of January 15.

Locomotives

Number	Type	Building works
Steam		
1	Prototype 4-6-2 Cl. "8"	Crewe
10	B.R. standard 4-6-2 Cl. "7"	Crewe
25	,, 4-6-0 Cl. "5"	Derby
5	,, 4-6-0 Cl. "4"	Swindon
10	,, 2-6-0 Cl. "4"	Doncaster
20	,, 2-6-0 Cl. "3"	Swindon
33	,, 2-6-0 Cl. "2"	Darlington
37 (5)	,, 2-6-4T Cl. "4"	Derby
37 (10)	,, 2-6-4T Cl. "4"	Doncaster
37 (22)	,, 2-6-4T Cl. "4"	Brighton
15	,, 2-6-2T Cl. "3"	Swindon
40	Heavy freight 2-10-0 Cl. "9"	Crewe
1	L.M.R. 0-4-0T Cl. "0"	Horwich
10	W.R. 0-6-0T 16xx	Swindon
30 (20)	W.R. 0-6-0T 94xx	Hunslet Engine Co. Ltd.
30 (10)	W.R. 0-6-0T 94xx	W. G. Bagnall Limited
237		
Diesel and diesel-electric		
54 (35)	B.R. standard 0-6-0 350 h.p. diesel-electric shunting ..	Derby
54 (19)	,, ,, ,,	Darlington
1	S.R. main-line 2,000-h.p. diesel-electric	Brighton
5	0-6-0 200-h.p. diesel-mech. ..	Drewry Car Co. Ltd.
3	0-4-0 153-h.p. diesel-mech. ..	Hunslet Engine Co. Ltd.
6	0-6-0 200-h.p. diesel-hydraulic	North British Locomotive Co. Ltd.
69		
Electric		
6	Co-Co (Manchester-Sheffield-Wath)	Gorton

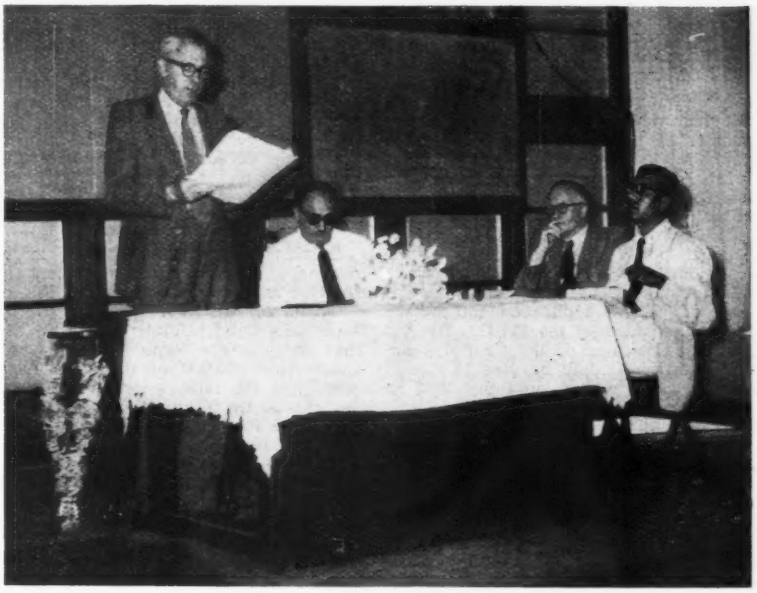
Total locomotives (all types), 312

Passenger and Freight Vehicles

—	Wagons	Coaching stock	
		Passenger	Non-passenger
Derby	4,000	230	31
Wolverton	2,400	280	8
Earlestown	—	—	100
Doncaster	—	150	—
York	—	180	75
Faverdale	1,800	—	500
Shildon	7,200	—	—
Swindon	1,500	200	—
Eastleigh	—	400	1
Ashford	3,000	—	35
Lancing	100	—	—
	20,000	1,400	750
Contractors ..	33,000	380	180
Totals	53,000	1,820	930

Bombay Railway Signal & Telecommunication Society

Expansion of activities in past three years



At the annual general meeting. (Left to right) Mr. H. C. Towers, Mr. K. P. Mushran, Mr. W. Duncan, Chief Signal & Telecommunication Engineer, Central Railway, and Mr. S. A. Srinivasan

The annual general meeting of the Bombay Railway Signal & Telecommunication Society was held recently at Electric House, Bombay. Those present included Mr. K. P. Mushran, General Manager, Western Railway, and Mr. R. Sood, Government Inspector of Railways, Circle No. 5 (Bombay).

Mr. S. A. Srinivasan, Honorary Secretary, read the report on the year's work and mentioned the retirement of the Chairman, Mr. H. C. Towers, Chief Signal & Telecommunication Engineer, Western Railway (referred to also on page 579 of our November 20 issue). He said that Mr. Towers was entirely responsible for the formation of the society, which had brought the signal and telecommunication staff of the Western and Central Railways together for frank and friendly discussion.

Mr. Mushran, Mr. Sood, and Mr. W. Duncan, the newly-elected Chairman, also paid tribute to Mr. Towers' work in India for the advancement of modern railway signalling in general, and for the Bombay Signal Society in particular.

Activities of Society

Mr. Towers replied that it was a matter of great satisfaction to him that the work started over three years ago had advanced to its present stage.

Many papers on signalling subjects had been presented and discussions held. There had also been a very successful all-day meeting in December, 1952, on which various important signalling installations had been visited.

Their success, however, was not a matter for complacency, and he appealed to members to write more papers on signal and telecommunication subjects.

The meeting was preceded by a tea party attended by wives of members. Mr. and Mrs. Towers were garlanded by Mr. Srinivasan and Mr. Shenoy on behalf of the committee and members of the society.

Staff & Labour Matters

Minister of Labour and Wage Talks

The Economic Committee of the T.U.C. has decided to accept the invitation of the Minister of Labour, Sir Walter Monckton, to participate in talks on the machinery of industrial arbitration and the suggestion that an impartial organisation should be set up to examine general economic questions affecting wages; the suggestion emanated from the reports of the courts of inquiry appointed by the Minister to inquire into the wages dispute in the engineering and shipbuilding industries.

Mr. C. J. Geddes, who was a member of the two courts of inquiry and also a member of the T.U.C. Economic Committee, is understood to have explained to the committee the meaning of the recommendation which is of an ad hoc body set up to examine the economic position of Britain in the world, and the likely effects upon it of a continuation of the present annual round of wage increases.

It is understood that the T.U.C. is also willing to discuss arbitration machinery with the Minister, but that it will probably insist that this be dealt with quite separately from the establishment of an impartial body.

RECORD STEEL PRODUCTION.—Steel production in February averaged 357,200 tons a week of ingots and castings. This is the highest figure ever recorded for February and compares with 352,400 tons in the coresponding month of 1953. Pig iron production in February averaged 222,300 tons a week.

Questions in Parliament

Transport Consultative Committees

Mr. Ernest Davies (Enfield E.—Lab.) on March 10 asked the Minister of Transport & Civil Aviation why the recommendations made by the Central Transport Consultative Committee and referred to in paragraph 19 of their report to him on January 12, 1954, were not accepted; and why they were refused permission to submit their views upon the question of the number of persons allowed to stand in public service vehicles.

Mr. Alan Lennox-Boyd stated in a written reply that much as he valued the advice of the Consultative Committees, he had to take his own decisions on matters of national policy after considering representations from any quarter. The question of standing passengers concerned regulations of general application rather than services provided by the B.T.C. He had told the Chairman of the Central Committee that he would be glad to consult them on such matters in future and he thought, on reflection, that he could well have done it this time.

Mr. Ernest Davies also inquired what action the Minister of Transport & Civil Aviation had taken on the recommendation of the Central Transport Consultative Committee that they should be consulted on schemes of reorganisation prepared by the Commission under the Transport Act, 1953.

Mr. Lennox-Boyd stated that he intended to include the Central Transport Consultative Committee among the bodies whom he would consult when he received the scheme from the B.T.C.

Parliamentary Notes

Civil Defence Transport Regulations

Lord Hawke (Lord in Waiting) moving in the House of Lords on March 4 that the Civil Defence (Transport) Regulations, 1954, be approved, said that the main objective was to enable the public utility services to function in the event of hostile attack. The rate of grant for the railways was 100 per cent. In the Act of 1939, 50 per cent was the standard rate; during the last war the grant rate to railways was 100 per cent. The type of works on the railways was largely equipment which would provide control should communications be shattered.

Replying to points raised during the discussion, Lord Hawke said that in 1953-1954 the railways set out to spend £1,200,000 and they had succeeded in spending only £600,000. That was proof that the railway suppliers of this country were fully occupied in carrying out the normal arrears of maintenance to the railways, and there was precious little manufacturing space available for this extra equipment. The rehabilitation of the railways could be regarded as the best form of civil defence.

The motion to approve the Regulations was agreed to.

Transport Civil Defence Regulations

Mr. Hugh Molson (Joint Parliamentary Secetary to the Ministry of Transport & Civil Aviation) on March 2 moved that the Draft Civil Defence (Transport) Regulations, 1954, be approved. He said that under Section 6 of the Civil Defence Act, 1948, a Minister might make Regulations to secure the carrying out of such Civil Defence matters as were his concern. The Minister of Transport had been designated for the taking of measures for securing the continued operation of railway and other forms of transport.

The regulations, he said, gave the Minister power to require due functioning measures to be undertaken and also provided for grants to meet all or part of the cost. The rates of grant varied. In general the grant would be 52.75 per cent, but for the railways it would be 100 per cent, because the B.T.C. would not derive any benefit from the remission of income tax or profits tax and because the transmission of the cost to the consumer was somewhat difficult.

The motion was agreed to.

Safety in Employment Bill

Speaking in the debate on the second reading of the Safety in Employment (Inspection and Safety Organisation) Bill, on February 26, Mr. A. J. Champion (Derbyshire S.E.—Lab.), a former signalman, said that the Gowers Report showed quite clearly that 500,000 of the 600,000 employees in the railway industry were not covered by the Factories Acts. He welcomed the Parliamentary Secretary's statement that it was hoped to introduce legislation. He agreed with the Gowers Committee that they needed legislative provisions to bring to the railways the safeguards that were possible under the Factories Acts. His trade union, the N.U.R., was urging the House to pass legislation giving them the benefits of the Factories Acts respecting welfare and safety.

The debate was adjourned.

Contracts & Tenders

The Gloucester Railway Carriage & Wagon Co. Ltd. has received an order for 12 bogie carriage underfames for the Sudan Railways.

Linke-Hoffman-Busch G.m.b.H., Salzgitter-Watenstedt, Germany, has secured an order from the National Railways of Mexico for coaches to the value of DM. 20,000,000 (£1,700,000). It is understood that delivery of the rolling stock is dependent on the provision of heavy cranes and other unloading facilities at Vera Cruz.

British Railways, North Eastern Region, have placed orders for work at Ouseburn Viaduct (Bridge No. 22), Manors, Newcastle, as follows:—

Dorman Long & Co. Ltd., Luton: strengthening under main lines (arches 1 to 4 and part Arch 5)

Ruberoid Co. Ltd.: Newcastle-on-Tyne 6: waterproofing of deck

British Railways, Eastern Region, have placed the undermentioned contracts:—

Ransomes & Rapier Limited, Ipswich: supply and delivery of seven Rapier 7 Standard non-slewing diesel-electric mobile cranes for Commercial Department, Eastern Region

Steels Engineering Products Limited, Sunderland: supply and delivery of one model S1210 "Aeneas" Coles full-circle-slewing diesel-electric mobile crane for Commercial Department, Eastern Region

Tersons Limited, London, N.3: maintenance of permanent way in Peterborough District

W. & C. French Limited, Buckhurst Hill: construction of reinforced concrete culvert under underline bridge No. 162 between Abbots Ripton and Holme

British Railways, Western Region, have placed the following contracts:—

C. H. Bailey Limited, Newport: work in connection with the annual overhaul of the ss. *St Patrick*

A. Estcourt & Sons, Barton Street, Gloucester: alterations to Gloucester Goods Shed

C. A. Hayes & Sons Ltd., Bristol, 8: reconstruction of Montpelier Station, Bristol

W. C. Holmes & Co. Ltd., Huddersfield: Supply, delivery and erection of concentrated ammoniacal liquor plant at Swindon Works, Gasworks

Vickery Bros. (Barry) Ltd., Barry: reconstruction of station buildings, Cadoxton

Bennett Bros. (Contractors) Ltd., Swansea: additional office accommodation at Swansea High Street Station

Carter-Horseley (Engineers) Limited, Waddon: reglazing and other work at Marylebone Station

Lucas Furnaces Limited, Birmingham, 7: rebuilding and conversion of the gas-fired furnace in the Heat Treatment Shop, Locomotive Works, Swindon

The Universal Cleaning & Restoration Co. Ltd., London, W.12: cleaning stonework and brickwork at Cardiff Queen Street Station

The Special Register Information Service, Board of Trade, Export Services Branch, states that the United Kingdom Trade Commissioner at Calcutta reports that Guest, Keen Williams Limited, 7, Council House Street, Calcutta, wishes to represent United Kingdom firms for railway stores and equipment and would be specially interested in the handling of specialities covering railway track equipment. Guest, Keen Williams Limited is considered to be a suitable connection for United Kingdom firms seeking representation in India. United Kingdom firms interested should communicate direct with the Calcutta firm at the address given. It would be appreciated if firms would advise the Export Services Branch, Lacon House, Theobalds Road, W.C.1 (quoting reference ESB/5918/54), of any action they take in order that the United Kingdom Trade Commissioner at Calcutta may be informed.

The Special Register Information Service, Board of Trade, Export Services Branch, states that the British Embassy at Montevideo has reported that the Administracion de Ferrocarriles del Estado is calling for tenders for steel for locomotive stays.

The steel is to conform to A.S.T.M. A.86-39 Grade "A," to be supplied in the following measurements and quantities:—

(1) 500 kg. hollow steel, $\frac{7}{8}$ in. dia.

(2) 4,000 kg. hollow steel, $1\frac{1}{16}$ in. dia.

(3) 2,500 kg., hollow steel, 1 in. dia.

To be supplied in lengths of 12 ft. dia. of aperture, $\frac{3}{16}$ in.

(4) 3,000 kg., solid steel, $\frac{7}{8}$ in. dia., in lengths of 16 ft.

Prices must be quoted in either Uruguayan currency or foreign currency for 100 kg., goods to be delivered C. & F. Montevideo

The closing date for the receipt of tenders is March 31, and the guarantee required for maintenance of offers is UR$300.

A copy of the specification (in Spanish) is available on loan to United Kingdom firms from the Export Services Branch, Lacon House, Theobalds Road, London, W.C.1.

The Special Register Information Service, Board of Trade, Export Services Branch, states that the United Kingdom Trade Commissioner at Karachi has reported that the Director-General, Department of Supply & Development (Metals & Hardware Directorate), Ministry of Industries, Government of Pakistan, is calling

for tenders for 2,244 axles, 1,289 tyres, 85 wheel centres.

The closing date for the receipt of tenders is March 25. They should be addressed to the Director-General of Supply & Development, Frere Road, Karachi. A set of the tender documents without drawings is available on loan in order of application to the Export Services Branch, Lacon House, Theobalds Road, London, W.C.1.

The Special Register Information Service, Board of Trade, Export Services Branch, states that the United Kingdom Trade Commissioner at Karachi has reported that the Ministry of Communications (Railway Division), Government of Pakistan, is calling for tenders for :—

I. *North Western Railway*

(*a*) fishbolts with nuts with square head and hexagonal nuts for 90R FF B.S.S. rails (5 in. by 1 in. dia.), 124,680 (126 tons)

(*b*) mild-steel dog-spikes ($5\frac{1}{8}$ in. by $\frac{5}{8}$ in. by $\frac{5}{8}$ in.), 1,230,300 (429 tons)

(*c*) mild-steel round-spikes ($5\frac{7}{8}$ in. by $\frac{3}{4}$ in. dia.), 980,300 (441 tons)

(*d*) mild-steel bearing plates for 90R FF B.S.S. single rail canted, 178,200 (1,096 tons)

II. *Eastern Bengal Railway*

(*a*) Fishbolts with nuts with square head and hexagonal nuts for 60R FF B.S.S. rails (4 in. by $\frac{7}{8}$ in. dia.), 46,200 (31 tons)

(*b*) mild-steel dog-spikes:

(i) $4\frac{3}{4}$ in. by $\frac{5}{8}$ in. by $\frac{5}{8}$ in., 800,000 (246 tons)

(ii) $4\frac{1}{4}$ in. by $\frac{5}{8}$ in. by $\frac{5}{8}$ in., 500,000 (141 tons)

N.B.—At the time of placing of the order item I (*d*) may be cancelled, while the quantities against items I (*a*), (*b*) and (*c*) may be reduced by 84, 184 and 260 long tons respectively

The closing date for receipt of tenders is April 3. Tenders in sealed covers endorsed "Tender for Rail fittings" should be submitted direct to the Director-General Railways, Ministry of Communications, Railway Division, Government of Pakistan, Karachi.

It is understood that tender documents including instructions to tenderers, tender form, schedule of requirements, specifications, drawings and standard conditions of contract may be obtained from the office of the High Commissioner for Pakistan, 39, Lowndes Square, London, S.W.1, on payment of Rs. 100 per set (not refundable).

A set of tender documents is available on loan to United Kingdom firms in order of application to the Branch, Lacon House, Theobalds Road, London, W.C.1.

The Director General of Supplies & Disposals, New Delhi, is inviting tenders for:

(*a*) 270 casings, inside for couplers (m.g.).
330 heads, coupler, yoke end (m.g.).
3,400 nuts, yoke, for coupling (m.g.).
4,020 screws for coupling (m.g.)

(*b*) 683 casings, special (b.g.)

(*c*) 472 copper joint rings for Hardric byepass valve (top type)

(*d*) 90 } rings (copper)
340 } joint (three classes)
170 }

(*e*) 500 brake beam (b.g.)

Tenders are to be submitted to the Director General, Supplies & Disposals, Shahjahan Road (Section SRI), New Delhi, quoting references: SRI/17294—D/III for (*a*); SRI/17189—D/III for (*b*); SRI/16968—D/II for (*c*); SRI/17180—D/II for (*d*); SRI/17160—D/II for (*e*). They will be received up to 10 a.m. on March 23 (*a*); March 24 (*b*); March 30 (*c*); April 7 (*d*); April 9 (*e*).

Forms of tender are only available for purchase in India from the Deputy Director General (Supplies), Directorate General of Supplies & Disposals, New Delhi; Director of Supplies & Disposals, Bombay or Calcutta; Deputy Director of Supplies & Disposals, Madras.

If the date for the receipt of tenders does not allow sufficient time for tenderers to obtain tender forms from India, they may submit their quotation to India in their own letter form or by telegram so long as all essential particulars are given and provided they simultaneously apply for tender forms and return them, duly completed as quickly as possible on the basis of advance quotations already submitted.

A copy of the tender forms can be examined at the India Store Department, 32-44, Edgware Road, London, W.2., on application to the "CDN" Branch and the drawing can be seen at the offices of Hodges, Bennett & Co., 59-60, Petty France, London, S.W.1, from whom copies may be obtained if required at a fixed price per sheet.

The Director-General of Supplies & Disposals, New Delhi, is inviting tenders for the following:—

1,550 piston rod packings (C.I.), complete with garter spring, $2\frac{3}{4}$ in. min. bore of spring for $3\frac{1}{4}$ in. dia. piston rod, suitable for "XA," "WM" class of locomotives

390 piston rod packings (C.I.), complete with garter spring, $3\frac{3}{8}$ in. min. bore of ring for 4 in. dia. piston rod suitable for "XP" class of locomotives

5,000 piston rod packings (C.I.), complete with garter spring 3 in. min. bore of ring for $3\frac{3}{4}$ in. dia. piston rod, suitable for "$\frac{D}{3 \text{ to } 5}$" "$\frac{H}{4—5}$" and "WP" class of locomotives

Delivery in two instalments by September 1, 1954, and March 1, 1955

Tenders are to be submitted to the Director General of Industries & Supplies, Shahjahan Road (Section SRI), New Delhi, quoting reference SRI/17132-D/II, and will be received up to 10 a.m. on March 30.

If the date for the receipt of tenders does not allow sufficient time for tenderers to obtain tender forms from India, they may submit their quotation to India in their own letter form or by telegram so long as all essential particulars are given and provided they simultaneously apply for tender forms and return them duly completed as quickly as possible on the basis of advance quotations already submitted. A copy of the tender form can be examined at the India Store Department, 32-44, Edgware Road, London, W.2, on application to the "CDN" Branch and the drawings can be seen at the offices of Hodges, Bennett & Co., 59-60, Petty France, London, S.W.1, from whom copies may be obtained if required at a fixed price per sheet.

The Special Register Information Service, Board of Trade, Export Services Branch, states that the United Kingdom Trade Commissioner at New Delhi has reported that the Directorate-General of Supplies & Disposals, Government of India, is calling for tenders for :—

320 tubes, steel element superheater centre raw, for "B" and "P" class locomotives

57 tubes, steel arch, for "B" and "P" class locomotives

333 ends for element tubes for all classes of locomotives

The closing date for receipt of tenders is 10 a.m. on April 6, and tenders should be addressed to the Director-General of Supplies & Disposals, Shahjahan Road, New Delhi. A set of the tender documents, with contract and drawings, is available on loan in order of application to the Branch.

The Special Register Information Service, Board of Trade, Export Services Branch, states that the United Kingdom Trade Commissioner at Delhi has reported that the Directorate General of Supplies & Disposals, Government of India, is calling for tenders (Tender No. SRIA/18909-D/IV) for :—

7,700 rubber, buffer and draw spring. Springs (IR and Steel class II) $1\frac{9}{16}$ in. dia. hole for buffers of IRCA standard wagons. Rubber S.S. quality

22,434 side buffer recoil spring parting plates

10,500 plate dividing for buffer spring $6\frac{3}{4}$ in. × $1\frac{9}{16}$ in. × $\frac{3}{16}$ in. thick

Delivery is required between September 30, 1954, and July 1, 1955. Tenderers should state the earliest delivery period which they can offer, and at the same time the date of commencement and completion of the order, and rate of supply during the intervening period.

The names of the consignees are as follow:—

(1) Dist. C.O.S., Southern Railway, Hubli
(2) „ „ Golden Rock Workshops
(3) „ „ Eastern Railway, Halisnahar
(4) „ „ „ „ Kharida

Tenderers should state the finished weight of 1,000 Nos. against each item and rail freight thereon per maund, from station of despatch to various destinations.

The closing date for receipt of tenders is 10 a.m. on March 30. If there is insufficient time in which to obtain the documents from India, tenderers are advised to submit quotations by letter and, at the same time, ask for a set of the tender documents to be sent to them, which documents they should undertake to complete and return as soon as possible on the basis of the quotations made by letter.

A set of the tender documents, including conditions of contract and drawings, is available for loan to United Kingdom firms in order of application to the Branch, Lacon House, Theobalds Road, London, W.C.1.

THROUGH SERVICE BETWEEN DERBY, NOTTINGHAM, LEICESTER, AND GORLESTON.—A through service is to be run this summer from Derby, Nottingham, and Leicester, via Melton Mowbray and Peterborough East to Lowestoft Central, Corton, Hopton-on-Sea, and Gorleston-on-Sea. It will operate on Saturdays only, between June 19 and September 4 outwards and between June 26 and September 11 return.

TEDDINGTON GROUP COMPANIES NEW BIRMINGHAM OFFICES.—Teddington Industrial Equipment Limited, one of the "Teddington" group of companies, manufacturers of automatic control equipment, have announced that the Midland Area offices of the group opened on February 25. They are situated at 107, Dale End, Birmingham, tel.: Central 4791 and 4792. A staff of engineers specialising in industrial control equipment for heating, air conditioning, industrial processes and engine protection provides a consultation service for Midlands manufacturers and users of Teddington Industrial Control Equipment. Mr. V. C. Miles, who has represented the company in the Midlands for the last few years, is in charge of the new offices.

XUM

Notes and News

Bensham Station to Close.—Bensham Station, on the East Coast main line of the North Eastern Region, will be closed to all traffic on and from April 5. The present parcels collection and delivery arrangements will continue.

Track Flooded at Cleethorpes, Eastern Region.—A high tide at Cleethorpes, Lincs, on March 5 damaged the embankment carrying the Eastern Region line. About 100 yd. of track were affected and trains could not leave or enter the station. Normal working was resumed by 10 a.m. the next day.

British Railways Coal, Iron, and Steel Traffic.—British Railways carried 3,309,500 tons of deep-mine and opencast coal last week, including 421,260 tons during the 48 hr. ended 6 a.m. on March 15. During the week ended March 6, 218,224 tons of iron and steel from principal steelworks and 282,400 tons of iron ore were conveyed.

Isle of Man Railway Company.—Receipts of the Isle of Man Railway Company for the year to December 31, 1953, were £84,435, and expenditure £76,162, compared with the 1952 totals of £87,411 and £79,676. The balance available for dividends is £8,473, and it is recommended that 5 per cent be paid on the preference and 2½ per cent on the ordinary share capital, leaving £2,473 to be carried forward. The length of lines owned and worked is 46 miles 20 ch. and 131,208 train miles were run.

Indian State Railways: Annual Reunion.—The annual dinner of the Indian State Railways (India and Pakistan) will be held this year as usual on the Monday in Derby week, May 31, at the Rembrandt Hotel, Thurloe Place, London, S.W.7, at 7 for 7.30 p.m. The speaker on this occasion will be Mr. W. G. Latham, Chief Engineer, Central Railway, Bombay, and the chair will be taken by Mr. J. A. Bell, late General Manager, East Indian Railway. The dinner will be preceded by a tea at the Rembrandt Hotel from 4 to 6 p.m. for offices and/or their wives.

Railway Students' Association.—Members of the Railway Students' Association on March 13 visited the Southern Region electrical control room at Three Bridges, and signal boxes at Redhill and Earlswood. The control room staff demonstrated the working of the supervisory equipment which controls traction supplies to the Central Section lines between South Croydon, Brighton, Worthing, Seaford, and Eastbourne. Tripping of a circuit breaker is indicated by a buzzer and flashing light on the mimic diagram above the substation or track-sectioning cabin concerned, and operation of a pushbutton causes a selector to identify the individual breaker, changing its light on the diagram from red to green. If the fault or overload has cleared, the breaker can be reclosed by movement of a thumbswitch.

Bi-Centenary of the Royal Society of Arts.—The Royal Society of Arts celebrates its bi-centenary this year, and the programme drawn up for the occasion will include a lecture on "Commerce, 1754-1954" to be given in the afternoon of March 25 by Sir Geoffrey Heyworth, Chairman, Unilever Limited, in the Society's lecture hall in John Adam Street, London, W.C.2. A banquet is to be held at the Savoy Hotel, London, on March 26, and a reception during the summer. The history of the Society includes awards to Richard Lovell Edgeworth, including a gold medal in 1769. Among Edgeworth's inventions was a "portable railway" patented in 1770. In 1868 prizes were offered for railway meat vans, and in 1874 the Society announced that it would award a gold medal for an improved railway lamp. Twelve lamps were submitted and the best of these were given practical trials in an unused section of tunnel on the St. John's Wood Railway. Activities of the Society in connection with railways include the recent Cantor Lecture on "Safety on the Railways" given by Lt.-Colonel G. R. S. Wilson, Chief Inspecting Officer of Railways, Ministry of Transport & Civil Aviation, the subject of editorial comment in our March 12 issue.

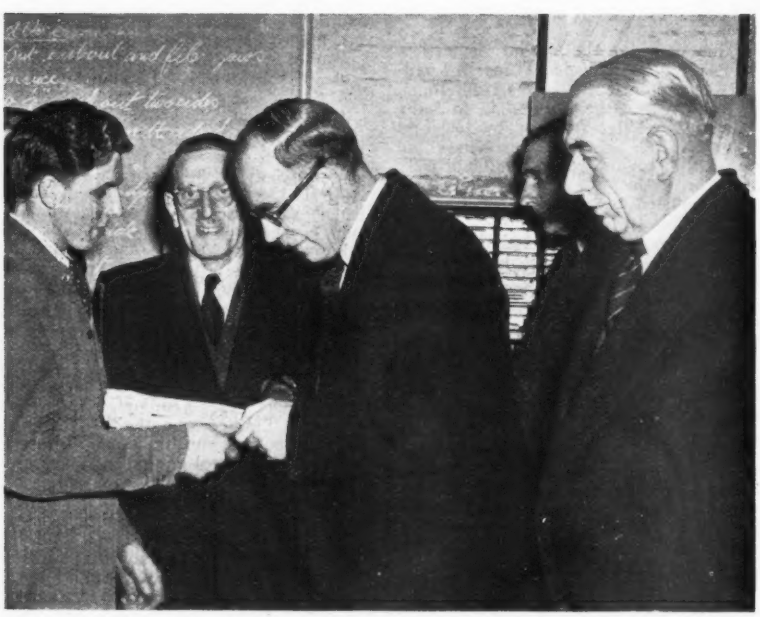
Air Fares Increase Foreshadowed.—Air-Commodore Griffith Powell, Managing Director, Silver City Airways, has said that the cost of air travel in Europe might be increased by as much as 15 per cent. He had returned from a conference of the Federation of Independent Air Transport Operators in Paris, where plans to oppose a new French Government tax on air passengers were discussed. Air-Commodore Powell says that the effect would be that on some routes, including the British 5s. tax as well, passengers would have to pay 21 per cent extra.

Special Trains for the Grand National.—Seventeen special trains will be run by the London Midland Region to carry 8,000 passengers to the Grand National this year. Already more than half the seats have been sold. Four of the trains will run from Euston, and others from Watford, Birmingham, Cheadle, Manchester, Oldham, Colne, Blackpool, Southport, St. Albans, and Carlisle. Day excursion fares will be charged except by trains from Euston, three of which will be first class only expresses at a fare which will include all meals and a reserved seat. There will be dining cars on the trains from Watford and St. Albans and a cafeteria car on that from Carlisle.

Western Region Music and Drama Festival.—The British Railways, Western Region, Music and Drama Annual Festival opened at the Town Hall, Reading, on March 15 and continued throughout the week to March 20, the total entry being nearly 100 above that of last year. Competitions ranged from mixed choirs, male voice and ladies choirs, children's and veterans' choirs, brass bands and orchestras, and from one-act plays to individual public speaking, debating, the art of chairmanship, logical grumbling and public speaking (teams). The Mayor of Reading extended a civic welcome to the festival on the opening day March 15. The final evening session will take place tomorrow, March 20, when the Hallelujah Chorus from Handel's Messiah will be sung by the Oswestry Mixed Choir, augmented by other choral groups and competitors and local choristers. It will be conducted by Mr. Eric Cundell, Principal of the Guildhall School of Music and Drama, and Dr. Thomas Armstrong of Oxford will be at the grand organ.

Retired Railway Officers' Society.—The report of the Retired Railway Officers' Society for the year ended December 31, 1953, shows that the decrease of nine members and two resignations were compensated by the election of 11 new members. The total membership thus remains at 181. The oldest member, Sir Sam Fay,

Sir Brian Robertson's Visit to Derby



Sir Brian Robertson, Chairman of the British Transport Commission, being presented by Trainee Fitter Terence Bennett with a hacksaw during his recent visit to Derby Locomotive Works Training School, London Midland Region; Mr. J. W. Watkins, Chief Regional Manager, is on the right

OFFICIAL NOTICES

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

DUE to plant expansion important wagon builder desires Sales Engineer for Belgian Plant. Work to consist of estimating costs both material and labour, preparing detailed technical specifications, writing quotations, and general sales work both written and by personal contact. Spanish and French languages desirable. Technical training essential. Preference given to man willing to travel. Excellent future for man with right combinations of sales and technical abilities. Minimum age 25, maximum depending on experience but preferably not over 45. Excellent salary depending on qualifications. Reply Box 89, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

BOUND VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25s. per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press Limited, 33, Tothill Street, London, S.W.1.

INTERNATIONAL RAILWAY CONGRESS, LONDON, 1954

APPLICATIONS are invited for appointment as Official Photographers to the International Railway Congress, London, May 19-26, 1954. Successful applicants will be required to provide rapid service of photographs, to official and personal orders, of business programme, technical visits, and social functions. No exclusive Press rights.

Application form (with fuller detail) from the English General Secretary, I.R.C., 222, Marylebone Road, London, N.W.1, to whom form should be returned within 14 days of the appearance of this notice.

R. P. ATKINSON & CO., 12, Waterloo Road, Wolverhampton. Phone Wolverhampton 23617. Steel Bars, Flats, Sections and Sheets, traction and colliery equipment. Enquiries invited.

R. P. ATKINSON & CO., Consulting Engineers & Agents, 12, Waterloo Road, Wolverhampton. Phone Wolverhampton 23617. Drawing office work:— electrical, mechanical, and traction equipment also jig and tool design. Layouts and full detail work to clients specifications.

A.E.C. LIMITED require Designers and Draughtsmen for development of Diesel Trains. Premises at Borehamwood, Herts. Work is in connection with a new project on behalf of British United Traction Co., Ltd., and automobile and railway experience would be an advantage. Permanent employment and pension scheme. Applications in writing stating age, experience, and salary required to Staff Records Office, Windmill Lane, Southall, Middlesex.

GUAQUI LA PAZ RAILWAY.—Assistant accountant. Qualifications: Man who has passed intermediate examination of recognised accountancy body preferred. Knowledge of railway accounts an advantage. Preferably single between 28/35 years of age. SOUTHERN RAILWAY OF PERU. Locomotive, Carriage and Wagon Senior Draughtsman required, 30/35 years of age. Qualifications: Must have served a full general apprenticeship in an engineering workshop (preferably railway) and have at least five years drawing office experience with some time in an executive capacity. A knowledge of Spanish an advantage. Future prospects.. Apply to The Secretary, Peruvian Corporation Limited, 144, Leadenhall Street, London, E.C.3.

died during the year at the age of 96. The monthly meetings continued to be popular, and the Autumn Luncheon at the Criterion Restaurant was as successful a function as its predecessors. Sir William Stanier was elected President for 1953.

Crown Agents for the Colonies.—The Colonial Office has announced that the Queen has approved that from April 1 the Crown Agents for the Colonies shall be styled the Crown Agents for Oversea Governments & Administrations. It was stated that the new title would reflect more accurately the function of the department.

Railway Students' Association.—The last ordinary meeting of the Railway Students' Association for this session will be held at the London School of Economics & Political Science on March 24 at 6.15 p.m. A paper on "Some Changes in Railway Charging Law" will be read by Mr. H. A. Chapman, Assistant Chief Solicitor, British Transport Commission. Mr. David Blee, the President of the Association, will be in the chair, and visitors will be welcomed. Applications for inclusion in the visits to Camden and St. Pancras depots may now be submitted.

Transport Examinations in Ireland.—The Council of the Institute of Transport has recognised, as educational qualifications for membership, the examinations conducted at the High School of Commerce, Dublin, on behalf of the Vocational Education Committee for the City of Dublin. Commencing with the examinations to be held in May next, passes will be accepted by the Institute as qualifications for Graduateship and Associate Membership. The subject of the examinations and the syllabuses will, subject to local needs, be those prescribed by the Institute of Transport, but the responsibility for setting and marking papers will rest with the City of Dublin Vocational Education Committee. Entry for the present will be restricted to students of the Vocational Education Committee who study at the High School of Commerce, Dublin, but the extension of the examinations scheme to external students resident in the Republic of Ireland, will be a matter for future consideration.

More Leyland Buses for London Transport.—To assist in the impending completion of the London Transport post-war programme of bus replacement and general fleet expansion, Leyland Motors Limited are to deliver 163 bus chassis of the post-war "RT" series over the next six months. This order is the latest in the post-war list of Leylands ordered by the Executive, which now amounts to some 2,300 vehicles. They are 7 ft. 6 in. wide. Standard "RT" bodies specially designed by London Transport will be fitted to 132 of these new chassis by Park Royal and the remaining 31 by M.C.W.

Large Capacity Spring Balance.—Geo. Salter & Co. Ltd. will be showing a 12 ft. high spring balance of over six tons weight at the Castle Bromwich (Birmingham) Section of the British Industries Fair. Although the maximum deflection under full load is only one-eighth of an inch the dial is graduated to 200 tons by 1 ton divisions. The balance is an outsize development of the company's existing crane weigher which allows loads to be lifted and weighed in a single operation.

Proposed Closing of Crystal Palace High Level Branch.—Closing is under consideration by British Railways of the Crystal Palace High Level Branch from Nunhead, as the volume of traffic in recent years has been very small. No definite date has been agreed as to when the passenger and freight services will be withdrawn; the matter has still to be considered by the Transport Users' Consultative Committee for London. It is unlikely, however, that the Line will be closed before the end of the summer. The area is well served by other Southern Region stations and London Transport buses, and the latter will be augmented by the extension of a bus route following much the same route as the railway.

New Ironworks Project at Appleby-Frodingham.—The first furnace of the new ironworks project at Appleby-Frodingham was blown in on March 1 by Sir Walter Benton Jones, Chairman of the United Steel Companies. In his speech Sir Walter Benton Jones referred to the great strides made in iron manufacture in the last 80 years. In 1953, he said, there were 13 furnaces built and 12 in blast in Lincolnshire. Pig iron made was 1,560,000 tons and of this 975,000 tons were made at Appleby-Frodingham. Output per furnace in blast for the county was 130,000 tons. At the beginning of 1953 Appleby-Frodingham had seven furnaces. When the two latest furnaces are completed South Ironworks would be a four-furnace plant, expected to produce 1,300,000 tons a year; average production per furnace would then be 325,000 tons, which average, however, must be judged by the quality of the ore available. It was exceptionally lean, the average iron content being 24 per cent. In other parts of the world the output per furnace might be twice as much, but the quality of the ore would be up to three times as high.

Vickers Limited Results.—At a recent meeting of the board of directors of Vickers Limited, the following final dividends in respect of the year 1953 were declared: 2½ per cent actual, less tax, on the preferred 5 per cent, and 2½ per cent actual, less tax, on the 5 per cent preference stock. Payment will be made on March 26.

B.T.H. Exhibits at the Electrical Engineers' Exhibition.—On Stand No. 86 at the exhibition at Earls Court on March 16-20, the British Thomson-Houston Co. Ltd. is showing electric plant and equipment including motors of both fractional horsepower and industrial sizes; electric control gear; geared-motor units; and industrial electric heaters. Some of these exhibits are shown as working demonstrations, besides the recently introduced Stavolt close-regulation alternator and typical applications of electronics in industry such as a high-speed batch counter and photo-electric relays. Metal-enclosed switchgear for power station auxiliaries and industrial distribution systems is represented by examples of air-break double-tier drawout-switchgear units and a typical panel of switch and fuse gear. Other B.T.H. switchgear exhibits are included in the special feature, Switchgear Avenue, where a single-phase unit of a three-phase 220-kV. Shuntarc oil circuit-breaker, and examples of metal-clad vertical-plugging drawout switchgear for 6·6-kV. and 11-kV. service are shown.

Railway Club: Presidential Address.—In his annual Presidential address to the Railway Club on March 5, Mr. Kenneth Brown spoke on "The Wars of the Carriers, 1896-1954." The year 1896, he said, was important in British transport history, for in that year the Light Locomotives on Highways Act came into force and the internal combustion engine was freed from prohibitive legislation. After tracing the development of the mechanically propelled road motor vehicle, Mr. Brown pointed out that in an effort to protect the railways, the Road & Rail Traffic Act was passed in 1933, under which carriers by road were required to hold a licence, in contrast to the lack of protection afforded to the doomed canals when their monopoly was being invaded by the railways.

London Midland Region Station Closings.—The London Midland Region announces that the passenger service on the Bolton Great Moor Street - Manchester Exchange and Bolton Great Moor Street - Kenyon Junction lines will be withdrawn on and from Monday, March 29. Bolton (Great Moor Street), Plodder Lane, Little Hulton, Walkden Low Level, Atherton Bag Lane, Atherleigh, West Leigh, and Pennington Stations will be closed.

North-Western Management Conference, Southport.—A conference is to be held at Southport from April 2 or 3 to provide firms in the north-west with an opportunity for discussing their most pressing management problems. The conference has been arranged by the British Institute of Management in association with the regional organisations of the Federation of British Industries, the National Union of Manufacturers and the Institute of Industrial Administration.

Institute of Welding : Spring Meeting.—The Spring Meeting of the Institute of Welding is being held this year fom Wednesday, April 28 to Saturday, May 1, in South Wales and Bristol. It will open on the evening of April 28 at Porthcawl, Glamorganshire; lectures and a works visit are being organised in South Wales on April 29, and on the evening of that day members will go on to Bristol, where the meeting will continue on April 30, and the morning of May 1. The South Wales and South Western Branches are co-operating in the organisation of the meeting.

Westinghouse Brake & Signal Co. Ltd. Results.—The statement by the Chairman of the Westinghouse Brake & Signal Co. Ltd., Mr. A. R. S. Nutting, which accompanies the report for the year ended September 26, 1953, draws attention to the heavy incidence of taxation which required £763,048 or over 60 per cent of the total trading profits. The net profit was £249,605, a drop of £7,000 from the previous year, largely because of a taxation increase of £42,000. A dividend of 16 per cent (less tax) is recommended on the issued capital of £1,795,795, and also on the £225,000 of new stock issued to the shareholders of Gresham, Craven & Heatly (Holdings) Limited in exchange for their shares. This represents a return of about 5½ per cent on the total capital employed in the business, which amounts to £5,062,850.

Forthcoming Meetings

March 20 (*Sat.*).—Permanent Way Institution, Leeds & Bradford Section. Visit to Doncaster, Eastern Region, Locomotive Works, at 10 a.m.

March 23 (*Tue.*).—Institute of Transport, visual aids meeting, at 80, Portland Place, London, W.1, at 6 p.m. Discussion of three films: "Materials handling," "More power to your elbow," and "Palletisation in Holland."

March 23 (*Tue.*).—Institution of Civil Engineers, at Great George Street, Westminster, S.W.1, at 5.30 p.m. Paper on "Design and construction of Rama VI, Surat and Bandara Bridges in Thailand," by Messrs. O. A. Karensky and K. E. Hyatt.

March 24 (*Wed.*).—Railway Students' Association, at the London School of Economics & Political Science, Houghton Street, Aldwych, W.C.2, at 6.15 p.m. Paper on "Some changes in railway charging law," by Mr. H. A. Chapman, Assistant Chief Solicitor, British Transport Commission.

March 24 (*Wed.*).—Institute of Transport, Scottish Section, at the North British Hotel, Edinburgh, at 6.30 p.m. for 7 p.m. Annual dinner and visit of Mr. D. R. Lamb, a past-President.

March 25 (*Thu.*).—British Railways, Western Region London Lecture & Debating Society, in the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. Talk on "Impressions of a visit to Tasmania," illustrated by lantern slides, by Mr. H. H. Phillips, Assistant Chief Regional Manager, Western Region, preceded by the annual general meeting of the Society at 5.15 p.m.

March 26 (*Fri.*).—Mansion House Association on Transport, at the Trocadero Restaurant, Piccadilly Circus, London, W.1, at 12.15 for 12.45 p.m. Annual luncheon.

March 26 (*Fri.*).—Institute of Transport, Tees-side Section, at the Scotch Corner House, Richmond, at 7 for 7.30 p.m. Annual dinner and visit of Sir Gilmour Jenkins, a Vice-President and President-Elect.

March 27 (*Sat.*).—Railway Students' Association. Visits to Southern Region Freight Depot at Fratton, and the British Road Service depots at Cowes and Newport, Isle of Wight. Train leaves Waterloo at 8.50 a.m.

March 29 (*Mon.*).—Institute of Transport, Berks, Bucks & Oxon Section, at the Reindeer Hotel, Mackenzie Street, Slough, at 7 p.m. Paper on "The Post Office and transport," by Mr. L. J. Taylor.

March 30 (*Tue.*).—Institute of Transport, Metropolitan Graduate & Student Society, at 80, Portland Place, London, W.1, at 5.30 for 6 p.m. Election of officers and committee followed by a paper on "London Transport rail services," by Mr. H. G. M. Viney (Graduate).

March 31 (*Wed.*).—British Railways, Southern Region, Lecture & Debating Society, at the Chapter House, St. Thomas' Street, S.E.1, at 5.45 for 6 p.m. Reading of prize winning essays and annual general meeting.

April 2 (*Fri.*).—Railway Club, at 57, Fetter Lane, London, E.C.4, at 7 p.m. Paper on "The Lancashire, Derbyshire & East Coast Railway," by Mr. G. Stewart Dewsbery.

Railway Stock Market

Apart from the renewed strength of British Funds, which responded strongly to market talk of the possibility of an early decrease in the Bank rate, stock markets have been less firm with small mixed movements in the industrial section. A disposition to await the Budget, and a certain amount of selling of securities in order to finance applications for the big Imperial Chemical loan stock issue, have been dominating factors. If income tax were reduced, and there were also a cut in the Bank rate, British Funds could rise well above current prices. In that event, however, industrial shares would also move higher in price, because the yield on British Funds influences yields on all other classes of securities.

Foreign rails received more attention. The outstanding movement was a further advance in Dorada ordinary in response to estimates of the break-up value of this stock which is regarded as being close on par. It is realised, however, that the question of break-up value will not arise until or unless there is a take-over move to nationalise the railway. Compared with a week ago the stock has advanced in the market from 66 to 75½, after touching 77 at one time.

There has also been good demand for Guayaquil & Quito 5 per cent first bonds, which at 50¼ were four points higher. Chilian Northern 5 per cent first debentures marked 26. Costa Rica ordinary stock 8¾ and the 6½ per cent second debentures 44.

Peruvian Corporation debentures were good at the higher level of 55¼ on the coupon announcement, while the preference stock strengthened to 6⅝ and the ordinary was 2½.

Manila Railway issues received less attention, though on balance the "A" debentures have firmed up from 82½ to 83 and the "B" debentures rose a point to 73. On the other hand, the preference and ordinary shares were unchanged at 8s. 6d. and 4s. respectively.

Mexican Central "A" debentures encountered a little selling and lost 1½ points at 81. Antofagasta issues also turned easier with the preference 39½, compared with 40½ a week ago, and the ordinary stock 8, compared with 8¼.

There was not a lot of business in United of Havana stocks, though those who hold on for the final liquidation payment should receive more than current market prices. The second income stock has remained at 43 and the consolidated stock at 6¾.

Canadian Pacifics have moved up from $43¼ to $44¼, while the preference stock remained at £66½, though the 4 per cent debentures eased to £89. White Pass new 5½ per cent loan stock was fractionally lower at £34⅜. The convertible debentures came back to £92½, but the no par value shares at $26½ were maintained on balance.

Movements in road transport shares were again small and unimportant, though higher dividend expectations brought in renewed demand for B.E.T. 5s. "A" deferred stock, which rose on balance from 42s. 3d. to 43s. 7½d. Maidstone & District were 21s. 6d., Southdown 29s. and West Riding strengthened to 27s. 3d.

Engineering and kindred shares were firmer generally with Guest Keen favoured up to 54s. 6d. on higher dividend talk. Vickers were 52s. 10½d. while Babcock & Wilcox have been maintained at 48s. 6d. Ruston & Hornsby at 44s. 3d. moved within 3d. of the level ruling a week ago, but T. W. Ward lost 1s. 3d. at 88s. 9d. Tube Investments at 61s. 6d. eased 3d.

Shares of locomotive builders and engineers displayed firmness with Beyer Peacock good at 35s. 10½d., compared with 34s. 9d. a week ago. Vulcan Foundry strengthened to 22s. 9d., G. D. Peters 5s. shares remained firm at 25s. on higher dividend hopes in the market, while North British Locomotive have been well maintained at 14s. Charles Roberts 5s. shares were 19s. 6d. and Wagon Repairs 5s. shares 12s. 3d.

Hurst Nelson shares at 42s. were the same as a week ago, while Birmingham Carriage changed hands around the slightly higher level of 31s. 3d. Gloucester Wagon 10s. shares remained at 17s.